APPENDIX A

Tables, Charts, and Forms

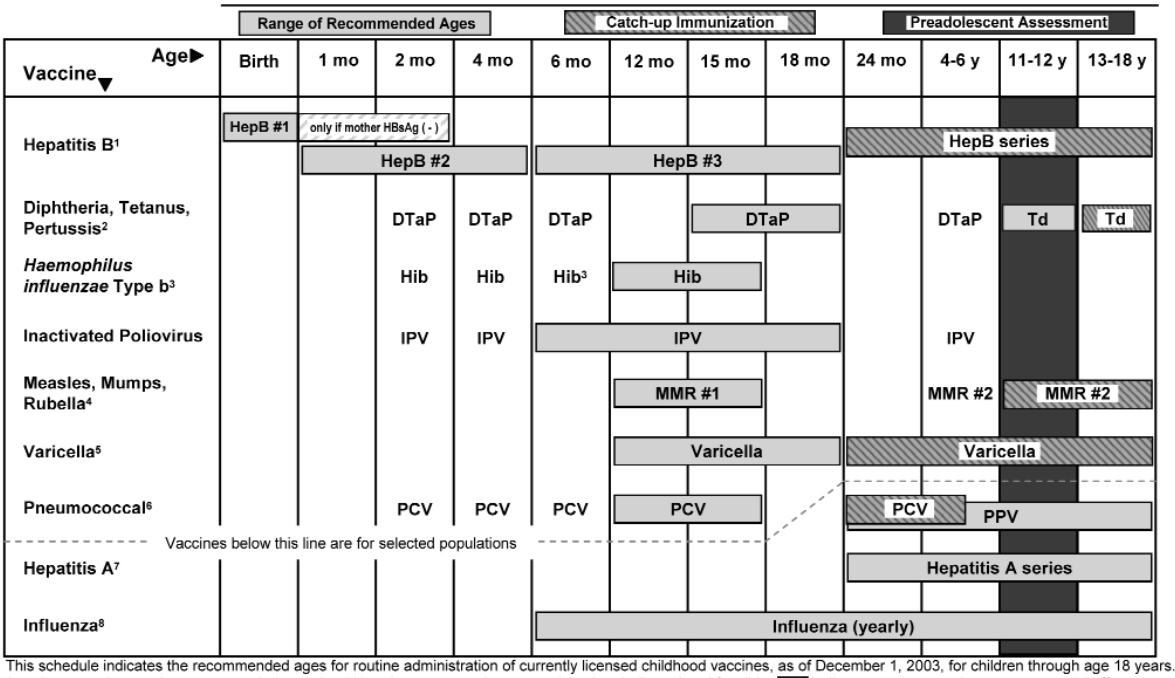
NOTE ON THE CHILDHOOD/ADOLESCENT IMMUNIZATION SCHEDULE

In October 2003, the Advisory Committee on Immunization Practices voted to routinely recommend influenza vaccine for children 6-23 months of age, as opposed to "encouraging" the vaccine for these children as it has done since 2002.

The ACIP, AAP and AAFP plan to publish two harmonized schedules in 2004. The first of these (January - June) is on the next page, and does not reflect the new influenza vaccine recommendation. The second (July - December) will be published later in the year and will include this recommendation. There should not be any other substantive changes.

The most recent Recommended Childhood and Adolescent Immunization Schedule can always be found on the National Immunization Program's web-site at http://www.cdc.gov/nip/recs/child-schedule.htm.

Recommended Childhood and Adolescent Immunization Schedule — United States, January – June 2004



This schedule indicates the recommended ages for routine administration of currently licensed childhood vaccines, as of December 1, 2003, for children through age 18 years. Any dose not given at the recommended age should be given at any subsequent visit when indicated and feasible. ▨ Indicates age groups that warrant special effort to administer those vaccines not previously given. Additional vaccines may be licensed and recommended during the year. Licensed combination vaccines may be used whenever any components of the combination are indicated and the vaccine's other components are not contraindicated. Providers should consult the manufacturers' package inserts for detailed recommendations. Clinically significant adverse events that follow immunization should be reported to the Vaccine Adverse Event Reporting System (VAERS). Guidance about how to obtain and complete a VAERS form can be found on the Internet: http://www.vaers.org/ or by calling 1-800-822-7967.

1. Hepatitis B (HepB) vaccine. All infants should receive the first dose of hepatitis B vaccine soon after birth and before hospital discharge; the first dose may also be given by age 2 months if the infant's mother is hepatitis B surface antigen (HBsAg) negative. Only monovalent HepB can be used for the birth dose. Monovalent or combination vaccine containing HepB may be used to complete the series. Four doses of vaccine may be administered when a birth dose is given. The second dose should be given at least 4 weeks after the first dose, except for combination vaccines which cannot be administered before age 6 weeks. The third dose should be given at least 16 weeks after the first dose and at least 8 weeks after the second dose. The last dose in the vaccination series (third or fourth dose) should not be administered before age 24 weeks.

Infants born to HBsAg-positive mothers should receive HepB and 0.5 mL of Hepatitis B Immune Globulin (HBIG) within 12 hours of birth at separate sites. The second dose is recommended at age 1 to 2 months. The last dose in the immunization series should not be administered before age 24 weeks. These infants should be tested for HBsAg and antibody to HBsAg (anti-HBs) at age 9 to 15 months.

Infants born to mothers whose HBsAg status is unknown should receive the first dose of the HepB series within 12 hours of birth. Maternal blood should be drawn as soon as possible to determine the mother's HBsAg status; if the HBsAg test is positive, the infant should receive HBIG as soon as possible (no later than age 1 week). The second dose is recommended at age 1 to 2 months. The last dose in the immunization series should not be administered before age 24 weeks.

2. Diphtheria and tetanus toxoids and acellular pertussis (DTaP) vaccine. The fourth dose of DTaP may be administered as early as age 12 months, provided 6 months have elapsed since the third dose and the child is unlikely to return at age 15 to 18 months. The final dose in the series should be given at age ≥4 years. **Tetanus and diphtheria toxoids (Td)** is recommended at age 11 to 12 years if at least 5 years have elapsed since the last dose of tetanus and diphtheria toxoid-containing vaccine. Subsequent routine Td boosters are recommended every 10 years.

3. *Haemophilus influenzae* type b (Hib) conjugate vaccine. Three Hib conjugate vaccines are licensed for infant use. If PRP-OMP (PedvaxHIB or ComVax [Merck]) is administered at ages 2 and 4 months, a dose at age 6 months is not required. DTaP/Hib combination products should not be used for primary immunization in infants at ages 2, 4 or 6 months but can be used as boosters following any Hib vaccine. The final dose in the series should be given at age ≥12 months.

4. Measles, mumps, and rubella vaccine (MMR). The second dose of MMR is recommended routinely at age 4 to 6 years but may be administered during any visit, provided at least 4 weeks have elapsed since the first dose and both doses are administered beginning at or after age 12 months. Those who have not previously received the second dose should complete the schedule by the 11- to 12-year-old visit.

5. Varicella vaccine. Varicella vaccine is recommended at any visit at or after age 12 months for susceptible children (i.e., those who lack a reliable history of chickenpox). Susceptible persons age ≥13 years should receive 2 doses, given at least 4 weeks apart.

6. Pneumococcal vaccine. The heptavalent **pneumococcal conjugate vaccine (PCV)** is recommended for all children age 2 to 23 months. It is also recommended for certain children age 24 to 59 months. The final dose in the series should be given at age ≥12 months. **Pneumococcal polysaccharide vaccine (PPV)** is recommended in addition to PCV for certain high-risk groups. See *MMWR* 2000;49(RR-9):1-38.

7. Hepatitis A vaccine. Hepatitis A vaccine is recommended for children and adolescents in selected states and regions and for certain high-risk groups; consult your local public health authority. Children and adolescents in these states, regions, and high-risk groups who have not been immunized against hepatitis A can begin the hepatitis A immunization series during any visit. The 2 doses in the series should be administered at least 6 months apart. See *MMWR* 1999;48(RR-12):1-37.

8. Influenza vaccine. Influenza vaccine is recommended annually for children age ≥6 months with certain risk factors (including but not limited to children with asthma, cardiac disease, sickle cell disease, human immunodeficiency virus infection, and diabetes; and household members of persons in high-risk groups [see *MMWR* 2003;52(RR-8):1-36]) and can be administered to all others wishing to obtain immunity. In addition, healthy children age 6 to 23 months are encouraged to receive influenza vaccine if feasible, because children in this age group are at substantially increased risk of influenza-related hospitalizations. For healthy persons age 5 to 49 years, the intranasally administered live-attenuated influenza vaccine (LAIV) is an acceptable alternative to the intramuscular trivalent inactivated influenza vaccine (TIV). See *MMWR* 2003;52(RR-13):1-8. Children receiving TIV should be administered a dosage appropriate for their age (0.25 mL if age 6 to 35 months or 0.5 mL if age ≥3 years). Children age ≤8 years who are receiving influenza vaccine for the first time should receive 2 doses (separated by at least 4 weeks for TIV and at least 6 weeks for LAIV).

For additional information about vaccines, including precautions and contraindications for immunization and vaccine shortages, please visit the National Immunization Program Web site at www.cdc.gov/nip/ or call the National Immunization Information Hotline at 800-232-2522 (English) or 800-232-0233 (Spanish).

Approved by the Advisory Committee on Immunization Practices (www.cdc.gov/nip/acip), the American Academy of Pediatrics (www.aap.org), and the American Academy of Family Physicians (www.aafp.org).

For Children and Adolescents Who Start Late or Who Are >1 Month Behind

The tables below give catch-up schedules and minimum intervals between doses for children who have delayed immunizations. There is no need to restart a vaccine series regardless of the time that has elapsed between doses. Use the chart appropriate for the child's age.

Catch-up schedule for children age 4 months through 6 years

Dose 1 (Minimum Age)	Minimum Interval Between Doses			
	Dose 1 to Dose 2	Dose 2 to Dose 3	Dose 3 to Dose 4	Dose 4 to Dose 5
DTaP (6 wk)	**4 wk**	**4 wk**	**6 mo**	**6 mo**[1]
IPV (6 wk)	**4 wk**	**4 wk**	**4 wk**[2]	
HepB[3] (birth)	**4 wk**	**8 wk** (and 16 wk after first dose)		
MMR (12 mo)	**4 wk**[4]			
Varicella (12 mo)				
Hib[5] (6 wk)	**4 wk:** if first dose given at age <12 mo **8 wk (as final dose):** if first dose given at age 12-14 mo **No further doses needed:** if first dose given at age ≥15 mo	**4 wk**[6]**:** if current age <12 mo **8 wk (as final dose)**[6]**:** if current age ≥12 mo and second dose given at age <15 mo **No further doses needed:** if previous dose given at age ≥15 mo	**8 wk (as final dose):** this dose only necessary for children age 12 mo–5 y who received 3 doses before age 12 mo	
PCV[7]**:** (6 wk)	**4 wk:** if first dose given at age <12 mo and current age <24 mo **8 wk (as final dose):** if first dose given at age ≥12 mo or current age 24-59 mo **No further doses needed:** for healthy children if first dose given at age ≥24 mo	**4 wk:** if current age <12 mo **8 wk (as final dose):** if current age ≥12 mo **No further doses needed:** for healthy children if previous dose given at age ≥24 mo	**8 wk (as final dose):** this dose only necessary for children age 12 mo–5 y who received 3 doses before age 12 mo	

Catch-up schedule for children age 7 through 18 years

Minimum Interval Between Doses		
Dose 1 to Dose 2	Dose 2 to Dose 3	Dose 3 to Booster Dose
Td: 4 wk	**Td:** 6 mo	**Td**[8]**:** **6 mo:** if first dose given at age <12 mo and current age <11 y **5 y:** if first dose given at age ≥12 mo and third dose given at age <7 y and current age ≥11 y **10 y:** if third dose given at age ≥7 y
IPV[9]**:** 4 wk	**IPV**[9]**:** 4 wk	**IPV**[2,9]
HepB: 4 wk	**HepB:** 8 wk (and 16 wk after first dose)	
MMR: 4 wk		
Varicella[10]**:** 4 wk		

1. **DTaP:** The fifth dose is not necessary if the fourth dose was given after the fourth birthday.
2. **IPV:** For children who received an all-IPV or all-oral poliovirus (OPV) series, a fourth dose is not necessary if third dose was given at age ≥4 years. If both OPV and IPV were given as part of a series, a total of 4 doses should be given, regardless of the child's current age.
3. **HepB:** All children and adolescents who have not been immunized against hepatitis B should begin the HepB immunization series during any visit. Providers should make special efforts to immunize children who were born in, or whose parents were born in, areas of the world where hepatitis B virus infection is moderately or highly endemic.
4. **MMR:** The second dose of MMR is recommended routinely at age 4 to 6 years but may be given earlier if desired.
5. **Hib:** Vaccine is not generally recommended for children age ≥5 years.
6. **Hib:** If current age <12 months and the first 2 doses were PRP-OMP (PedvaxHIB or ComVax [Merck]), the third (and final) dose should be given at age 12 to 15 months and at least 8 weeks after the second dose.
7. **PCV:** Vaccine is not generally recommended for children age ≥5 years.
8. **Td:** For children age 7 to 10 years, the interval between the third and booster dose is determined by the age when the first dose was given. For adolescents age 11 to 18 years, the interval is determined by the age when the third dose was given.
9. **IPV:** Vaccine is not generally recommended for persons age ≥18 years.
10. **Varicella:** Give 2-dose series to all susceptible adolescents age ≥13 years.

Reporting Adverse Reactions
Report adverse reactions to vaccines through the federal Vaccine Adverse Event Reporting System. For information on reporting reactions following immunization, please visit www.vaers.org or call the 24-hour national toll-free information line (800) 822-7967.

Disease Reporting
Report suspected cases of vaccine-preventable diseases to your state or local health department.

For additional information about vaccines, including precautions and contraindications for immunization and vaccine shortages, please visit the National Immunization Program Web site at www.cdc.gov/nip or call the National Immunization Information Hotline at 800-232-2522 (English) or 800-232-0233 (Spanish).

TABLE 1. Recommended and minimum ages and intervals between vaccine doses*

Vaccine and dose number	Recommended age for this dose	Minimum age for this dose	Recommended interval to next dose	Minimum interval to next dose
Hepatitis B1†	Birth–2 mos	Birth	1–4 mos	4 wks
Hepatitis B2	1–4 mos	4 weeks	2–17 mos	8 wks
Hepatitis B3§	6–18 mos	6 mos¶	—	—
Diphtheria and tetanus toxoids and acellular pertussis (DTaP)1	2 mos	6 wks	2 mos	4 wks
DTaP2	4 mos	10 wks	2 mos	4 wks
DTaP3	6 mos	14 wks	6–12 mos	6 mos¶**
DTaP4	15–18 mos	12 mos	3 yrs	6 mos¶
DTaP5	4–6 yrs	4 yrs	—	—
Haemophilus influenzae, type b (Hib)1††	2 mos	6 wks	2 mos	4 wks
Hib2	4 mos	10 wks	2 mos	4 wks
Hib3§§	6 mos	14 wks	6–9 mos	8 wks
Hib4	12–15 mos	12 mos	—	—
Inactivated poliovirus vaccine (IPV)1	2 mos	6 wks	2 mos	4 wks
IPV2	4 mos	10 wks	2–14 mos	4 wks
IPV3	6–18 mos	14 wks	3.5 yrs	4 wks
IPV4	4–6 yrs	18 wks	—	—
Pneumococcal conjugate vaccine (PCV)1††	2 mos	6 wks	2 mos	4 wks
PCV2	4 mos	10 wks	2 mos	4 wks
PCV3	6 mos	14 wks	6 mos	8 wks
PCV4	12–15 mos	12 mos	—	—
Measles, mumps, and rubella (MMR)1	12–15 mos¶¶	12 mos	3–5 yrs	4 wks
MMR2	4–6 yrs	13 mos	—	—
Varicella***	12–15 mos	12 mos	4 wks***	4 wks***
Hepatitis A1	≥2 yrs	2 yrs	6–18 mos¶	6 mos¶
Hepatitis A2	≥30 mos	30 mos	—	—
Influenza†††	—	6 mos¶	1 mo	4 wks
pneumococcal polysaccharide (PPV)1	—	2 yrs	5 yrs§§§	5 yrs
PPV2	—	7 yrs§§§	—	—

* Combination vaccines are available. Using licensed combination vaccines is preferred over separate injections of their equivalent component vaccines (**Source:** CDC. Combination vaccines for childhood immunization: recommendations of the Advisory Committee on Immunization Practices (ACIP), the American Academy of Pediatrics (AAP), and the American Academy of Family Physicians (AAFP). MMWR 1999;48[No. RR-5]:5). When administering combination vaccines, the minimum age for administration is the oldest age for any of the individual components; the minimum interval between doses is equal to the greatest interval of any of the individual antigens.

† A combination hepatitis B-Hib vaccine is available (Comvax®, manufactured by Merck Vaccine Division). This vaccine should not be administered to infants aged <6 weeks because of the Hib component.

§ Hepatitis B3 should be administered ≥8 weeks after Hepatitis B2 and 16 weeks after Hepatitis B1, and it should not be administered before age 6 months.

¶ Calendar months.

** The minimum interval between DTaP3 and DTaP4 is recommended to be ≥6 months. However, DTaP4 does not need to be repeated if administered ≥4 months after DTaP3.

†† For Hib and PCV, children receiving the first dose of vaccine at age ≥7 months require fewer doses to complete the series (see CDC. Haemophilus b conjugate vaccines for prevention of *Haemophilus influenzae*, type b disease among infants and children two months of age and older: recommendations of the ACIP. MMWR 1991;40[No. RR-1]:1–7, and CDC. Preventing pneumococcal disease among infants and young children: recommendations of the Advisory Committee on Immunization Practices [ACIP]. MMWR 2000;49[No. RR-9]:1–35).

§§ For a regimen of only polyribosylribitol phosphate-meningococcal outer membrane protein (PRP-OMP, PedvaxHib®, manufactured by Merck), a dose administered at age 6 months is not required.

¶¶ During a measles outbreak, if cases are occurring among infants aged <12 months, measles vaccination of infants aged ≥6 months can be undertaken as an outbreak control measure. However, doses administered at age <12 months should not be counted as part of the series (**Source:** CDC. Measles, mumps, and rubella — vaccine use and strategies for elimination of measles, rubella, and congenital rubella syndrome and control of mumps: recommendations of the Advisory Committee on Immunization Practices [ACIP]. MMWR 1998;47[No. RR-8]:1–57).

*** Children aged 12 months–13 years require only one dose of varicella vaccine. Persons aged ≥13 years should receive two doses separated by ≥4 weeks.

††† Two doses of inactivated influenza vaccine, separated by 4 weeks, are recommended for children aged 6 months–9 years who are receiving the vaccine for the first time. Children aged 6 months–9 years who have previously received influenza vaccine and persons aged ≥9 years require only one dose per influenza season.

§§§ Second doses of PPV are recommended for persons at highest risk for serious pneumococcal infection and those who are likely to have a rapid decline in pneumococcal antibody concentration. Revaccination 3 years after the previous dose can be considered for children at highest risk for severe pneumococcal infection who would be aged <10 years at the time of revaccination (see CDC. Prevention of pneumococcal disease: recommendations of the Advisory Committee on Immunization Practices [ACIP]. MMWR 1997;46[No. RR-8]:1–24).

Suggested intervals between administration of immune globulin preparations for different indications and measles-containing vaccine and varicella vaccine*

Product/Indication	Dose, including mg immunoglobulin G (IgG)/kg body weight*	Suggested Interval before Measles or Varicella Vaccination
RSV monoclonal antibody (Synagis™)§	15 mg/kg intramuscularly (IM)	None
Tetanus (TIG)	250 units (10 mg IgG/kg) IM	3 months
Hepatitis A (IG)		
Contact prophylaxis	0.02 mL/kg (3.3 mg IgG/kg) IM	3 months
International travel	0.06 mL/kg (10 mg IgG/kg) IM	3 months
Hepatitis B IG	0.06 mL/kg (10 mg IgG/kg) IM	3 months
Rabies IG	20 IU/kg (22 mg IgG/kg) IM	4 months
Varicella IG	125 units/10kg (20-40 mg IgG/kg) IM (maximum 625 units)	5 months
Measles prophylaxis IG		
Standard (i.e., nonimmunocompromised contact)	0.25 mL/kg (40 mg IgG/kg) IM	5 months
Immunocompromised contact	0.50 mL/kg (80 mg IgG/kg) IM	6 months
Blood transfusion		
Red blood cells (RBCs), washed	10 mL/kg negligible IgG/kg) intervenously (IV)	None
RBCs, adenine-saline added	10 mL/kg (10 mg IgG/kg) IV	3 months
Packed RBCs (Hct 65%)†	10 mL/kg (60 mg IgG/kg) IV	6 months
Whole blood (Hct 35-50%)†	10 mL/kg (80-100 mg IgG/kg) IV	6 months
Plasma/platelet products	10 mL/kg (160 mg IgG/kg) IV	7 months
Cytomegalovirus intravenous immune globulin (IGIV)	150 mg/kg maximum	6 months
Respiratory syncytial virus prophylaxis IGIV	750 mg/kg	9 months
IGIV		
Replacement therapy for immune deficiencies¶	300-400 mg/kg IV¶	8 months
Immune thrombocytopenic purpura	400 mg/kg IV	8 months
Immune thrombocytopenic purpura	1000 mg/kg IV	10 months
Kawasaki disease	2 grams/kg IV	11 months

*This table is not intended for determining the correct indications and dosage for using immune globulin products. Unvaccinated persons might not be fully protected against measles during the entire recommended interval, and additional doses of immune globulin and/or measles vaccine might be indicated after measles exposure. Concentrations of measles antibody in an immune globulin preparation can vary by manufacturer's lot. Rates of antibody clearance after receipt of an immune globulin preparation might vary also. Recommended intervals are extrapolated from an estimated half-life of 30 days for passively acquired antibody and an observed interference with the immune response to measles vaccine for 5 months after a dose of 80 mg IgG/kg.
(**Source:** Mason W, Takahashi M, Schneider T. Persisting passively acquired measles antibody following gamma globulin therapy for Kawasaki disease and response to live virus vaccination [Abstract 311]. Presented at the 32nd meeting of the Interscience Conference on Antimicrobial Agents and Chemotherapy, Los Angeles, California, October, 1992.)

§Contains antibody only to respiratory syncytial virus (RSV)

†Assumes a serum IgG concentration of 16 mg/mL.

¶Measles and varicella vaccination is recommended for children with asymptomatic or mildly symptomatic human immunodeficiency virus (HIV) infection but is contraindicated for persons with severe immunosuppression from HIV or any other immunosuppressive disorder.

From ACIP "General Recommendations on Immunization" February 8, 2002

Summary of ACIP Recommendations on Immunization of Immunocompromised Infants and Children

Vaccine	Routine (not Immumocompromised)	HIV Infection/ AIDS	Severely Immunocompromised (non-HIV Related)*	Asplenia	Renal Failure	Diabetes
Routine Infant Immunizations						
DTaP (DT/T/Td)	Recommended	Recommended	Recommended	Recommended	Recommended	Recommended
Hepatitis B	Recommended	Recommended	Recommended	Recommended	Recommended	Recommended
Hib	Recommended	Recommended	Recommended	Recommended	Recommended	Recommended
IPV	Recommended	Recommended	Recommended	Recommended	Recommended	Recommended
MMR (MR/M/R)	Recommended	Recommended/ Consider§	**Contraindicated**	Recommended	Recommended	Recommended
Pneumococcal (PCV7)	Recommended	Recommended	Recommended	Recommended	Recommended	Recommended
Varicella	Recommended	Consider†	**See Note¶**	Recommended	Recommended	Recommended
Other Childhood Immunizations						
Hepatitis A	Use if Indicated	Use if Indicated	Use if Indicated	Use if Indicated	Use if Indicated	Use if Indicated
Influenza (inactivated)	Use if Indicated	Recommended	Recommended	Recommended	Recommended	Recommended
Influenza (LAIV)	Use if Indicated	**Contraindicated**	**Contraindicated**	Use if Indicated	**Contraindicated**	**Contraindicated**
Pneumococcal (PPV23)‡	Use if Indicated	Recommended	Recommended	Recommended	Recommended	Recommended

* Severe immunosuppression can be the result of congenital immunodeficiency, HIV infection, leukemia, lymphoma, aplastic anemia, generalized malignancy or therapy with alkylating agents, antimetabolites, radiation, or large amounts of corticosteroids.

§ MMR vaccination is recommended for all **asymptomatic** HIV-infected persons who do not have evidence of severe immunosuppression (for definition, see 2000 AAP *Red Book*, Table 3.25, p. 329) for whom measles vaccination would otherwise be indicated. MMR vaccination should be considered for all **symptomatic** HIV-infected persons who do not have evidence of severe immunosuppression or of measles immunity.

† Two doses of varicella vaccine should be considered for asymptomatic or mildly symptomatic HIV-infected children, specifically children in CDC class N1 or A1 (see "Prevention of Varicella," *MMWR* Vol 48 No RR-6, May 28,1999, p. 3 footnote), with age-specific T cell percentages of 25% or higher.

¶ Varicella vaccine is not licensed for use in persons who have any malignant condition, including blood dyscrasias, leukemia, lymphomas of any type, or other malignant neoplasms affecting the bone marrow or lymphatic systems.
Varicella vaccine should not be administered to persons who have cellular immunodeficiencies, but persons with impaired humoral immunity may be vaccinated. A protocol exists for use of varicella vaccine in patients with acute lymphoblastic leukemia (ALL). (See "Prevention of Varicella," *MMWR* Vol 48 No RR-6, May 28, 1999, p. 17).
Varicella vaccine should not be administered to persons who have a family history of congenital or hereditary immunodeficiency in first-degree relatives unless the immune competence of the potential vaccine recipient has been clinically substantiated or verified by a laboratory.
Varicella vaccine should not be administered to persons receiving immunosuppressive therapy (except children who have ALL in remission, as noted above, or persons receiving corticosteroid-replacement therapy).

‡ Children who have completed the PCV7 vaccination series before age 2 years and who are among risk groups for which PPV23 is already recommended should receive one dose of PPV23 at age 2 years (≥2 months after the last dose of PCV7). These groups at high risk include children with SCD, children with functional or anatomic asplenia, children who are HIV-infected, and children who have immunocompromising or chronic diseases.

This table is based on Table 1 of the ACIP's *Use of Vaccines and Immune Globulins in Persons with Altered Immunocompetence* with modifications from subsequent ACIP statements.

September, 2003

Summary of ACIP Recommendations on Immunization of Immunocompromised Adults

Vaccine	Routine (not Immumocompromised)	HIV Infection/ AIDS	Severely Immunocompromised (non-HIV Related)*	Post-Solid Organ Transplant or Chronic Immunosuppresive Therapy	Asplenia	Renal Failure	Diabetes	Alcoholism and Alcoholic Cirrhosis
Hepatitis B	Use if Indicated	Use if Indicated	Use if Indicated	Use if Indicated	Use if Indicated	Recommended§	Use if Indicated	Use if Indicated
Hib	Not Recommended	Consider†	Recommended	Recommended	Recommended	Use if Indicated	Use if Indicated	Use if Indicated
Influenza (inactivated)	Recommended if ≥50 years of age	Recommended	Recommended	Recommended	Recommended	Recommended	Recommended	Recommended
Influenza (LAIV)	Use if Indicated	**Contraindicated**	**Contraindicated**	**Contraindicated**	Use if Indicated	**Contraindicated**	**Contraindicated**	**Contraindicated**
MMR (MR/M/R)	Use if Indicated	Recommended/ Consider¶	**Contraindicated**	**Contraindicated**	Use if Indicated	Use if Indicated	Use if Indicated	Use if Indicated
Meningococcal	Use if Indicated	Use if Indicated	Use if Indicated	Use if Indicated	Recommended	Use if Indicated	Use if Indicated	Use if Indicated
Pneumococcal (PPV)	Recommended if ≥65 years of age	Recommended	Recommended	Recommended	Recommended	Recommended	Recommended	Recommended
Td	Recommended	Recommended	Recommended	Recommended	Recommended	Recommended	Recommended	Recommended
Varicella	Use if Indicated	**Contraindicated**	See Note‡	**Contraindicated**	Use if Indicated	Use if Indicated	Use if Indicated	Use if Indicated

* Severe immunosuppression can be the result of congenital immunodeficiency, HIV infection, leukemia, lymphoma, aplastic anemia, generalized malignancy or therapy with alkylating agents, antimetabolites, radiation, or large amounts of corticosteroids.

§ Patients with renal failure on dialysis should have their anti-Hbs response tested after vaccination, and those found not to respond should be revaccinated.

† Clinicians deciding whether to administer Hib vaccine to HIV-infected persons should take into consideration the individual patient's risk of Hib disease and the effectiveness of the vaccine for these persons. In some settings, the incidence of Hib disease may be higher among HIV-infected adults than non-HIV-infected adults, and the disease can be severe in these patients.

¶ MMR vaccination is recommended for all **asymptomatic** HIV-infected persons who do not have evidence of severe immunosuppression (for definition, see 2000 AAP *Red Book*, Table 3.25, p. 329) for whom measles vaccination would otherwise be indicated. MMR vaccination should be considered for all **symptomatic** HIV-infected persons who do not have evidence of severe immunosuppression or of measles immunity.

‡ Varicella vaccine is not licensed for use in persons who have any malignant condition, including blood dyscrasias, leukemia, lymphomas of any type, or other malignant neoplasms affecting the bone marrow or lymphatic systems.
Varicella vaccine should not be administered to persons who have cellular immunodeficiencies, but persons with impared humoral immunity may be vaccinated. A protocol exists for use of varicella vaccine in patients <18 years of age with acute lymphoblastic leukemia (ALL). (See "Prevention of Varicella," *MMWR* Vol 48 No RR-6, May 28, 1999, p. 17).
Varicella vaccine should not be administered to persons who have a family history of congenital or hereditary immunodeficiency in first-degree relatives unless the immune competence of the potential vaccine recipient has been clinically substantiated or verified by a laboratory.

This table is based on Table 2 of the ACIP's *Use of Vaccines and Immune Globulins in Persons with Altered Immunocompetence* with modifications from subsequent ACIP statements.

September, 2003

Summary of ACIP Recommendations on Nonroutine Immunization of Immunocompromised Persons

Vaccine	Not Immunocompromised	HIV Infection/AIDS	Severely Immunocompromised (non-HIV related)*	Post-solid organ transplant or chronic immunosuppressive therapy	Asplenia, renal failure, diabetes, alcoholism, and alcoholic cirrhosis
Live Vaccines					
BCG	Use if Indicated	**Contraindicated**	**Contraindicated**	**Contraindicated**	Use if Indicated
Typhoid, Ty21a	Use if Indicated	**Contraindicated**	**Contraindicated**	**Contraindicated**	Use if Indicated
Vaccinia	Use if Indicated	**Contraindicated**	**Contraindicated**	**Contraindicated**	Use if Indicated
Varicella (Adults)	Use if Indicated	**Contraindicated**	**See Note**§	**Contraindicated**†	Use if Indicated
Yellow Fever¶	Use if Indicated	**Contraindicated**	**Contraindicated**	**Contraindicated**	Use if Indicated
Killed (Inactivated) Vaccines					
Anthrax	Use if Indicated	Use if Indicated	Use if Indicated	Use if Indicated	Use if Indicated
Polio (IPV)	Use if Indicated	Use if Indicated	Use if Indicated	Use if Indicated	Use if Indicated
Rabies	Use if Indicated	Use if Indicated	Use if Indicated	Use if Indicated	Use if Indicated
Typhoid, inactivated	Use if Indicated	Use if Indicated	Use if Indicated	Use if Indicated	Use if Indicated

* Severe immunosuppression can be the result of congenital immunodeficiency, HIV infection, leukemia, lymphoma, aplastic anemia, generalized malignancy or therapy with alkylating agents, antimetabolites, radiation, or large amounts of corticosteroids.

§ Varicella vaccine is not licensed for use in persons who have any malignant condition, including blood dyscrasias, leukemia, lymphomas of any type, or other malignant neoplasms affecting the bone marrow or lymphatic systems.
Varicella vaccine should not be administered to persons who have cellular immunodeficiencies, but persons with impaired humoral immunity may be vaccinated. A protocol exists for use of varicella vaccine in patients with acute lymphoblastic leukemia (ALL). (See "Prevention of Varicella," *MMWR* Vol 48 No RR-6, May 28, 1999, p. 17).
Varicella vaccine should not be administered to persons who have a family history of congenital or hereditary immunodeficiency in first-degree relatives unless the immune competence of the potential vaccine recipient has been clinically substantiated or verified by a laboratory.

† Except persons receiving corticosteroid-replacement therapy.

¶ Yellow fever vaccine should be considered for patients when exposure to yellow fever cannot be avoided. (For details, see *MMWR* Vol. 42 No. RR-4, 4/9/93, p. 7.)

This table is based on Table 3 of the ACIP's *Use of Vaccines and Immune Globulins in Persons with Altered Immunocompetence* with modifications from subsequent ACIP statements.

September, 2003

Recommended Doses of Currently Licensed Hepatitis B Vaccines

Patient's Age	Recombivax HB (Merck & Co.)		Engerix-B (SmithKline Beecham)		Patient's Age
	Pediatric/Adolescent Formulation *(Yellow Cap)* 5µg per 0.5ml	**Adult Formulation** *(Green Cap)* 10µg per 1.0ml	**Pediatric Formulation** *(Blue Cap)* 10µg per 0.5ml	**Adult Formulation** *(Orange Cap)* 20µg per 1.0ml	
Birth-10 Years[1]	5µg/0.5ml	5µg/0.5ml	10µg/0.5ml	N/A	**Birth-10 Years**[1]
11-19 Years[2]				20µg/1.0ml	**11-19 Years**
Adult	10µg/1.0ml	10µg/1.0ml	N/A		**Adult**

[1]Infants born to HBsAg-positive women should also receive hepatitis B immune globulin (HBIG) within 12 hours after birth.

[2]Adolescents 11-15 years of age may receive the 10µg/1.0ml adult formulation of Recombivax as a 2-dose schedule with the doses separated by 4-6 months.

N/A = Vaccine not approved for use in this age group.

January 2002

Contraindications and Precautions to Routine Childhood Vaccinations
BY CONDITION

DTaP ■ Hepatitis A ■ Hepatitis B ■ Hib ■ IPV ■ MMR ■ Pneumococcal conjugate ■ Varicella

THIS CONDITION:	*CONTRAINDICATES*:
Anaphylactic reaction to:	
Prior vaccine dose	That vaccine
Any vaccine component	That vaccine
2-phenoxyethanol	Hepatitis A
Alum	Hepatitis A
Baker's yeast	Hepatitis B
Gelatin	MMR, Varicella
Neomycin	MMR, Varicella, IPV
Polymyxin B	IPV
Streptomycin	IPV
Encephalopathy within 7 days of a previous dose of DTP or DTaP	DTaP
Immunodeficiency, due to any cause, including HIV[1]	MMR, Varicella[2]
Pregnancy	MMR, Varicella
TB – untreated, active	MMR, Varicella

THIS CONDITION:	IS A *PRECAUTION* FOR:
Moderate or severe acute illness	All vaccines
Recent administration of an antibody-containing blood product[3]	MMR, Varicella
Neurologic disorder – unstable or evolving	DTaP
Thrombocytopenia/ thrombocytopenic purpura (now or by history)	MMR
Any of these conditions after a previous dose of DTP or DTaP	DTaP
Fever of ≥40.5°C (105°F) unexplained by another cause (within 48 hours)	
Collapse or shocklike state (within 48 hours)	
Persistent, unconsolable crying lasting ≥3 hours (within 48 hours)	
Seizure or convulsion (within 72 hours)	
Guillain-Barré Syndrome (within 6 weeks)	

[1]*Symptomatic* HIV infection is generally a contraindication to MMR and varicella vaccines. Consider varicella vaccine for mildly symptomatic HIV-infected children, and consider MMR for symptomatic HIV-infected persons who do not have evidence of severe immunosuppression. *Asymptomatic* HIV infection is not a contraindication to either vaccine.

[2]Pure humoral immune deficiencies are not a contraindication to varicella vaccine.

[3]See ACIP General Recommendations for correct spacing.

*For more details, see appropriate ACIP recommendations (*http://www.cdc.gov/nip/publications/ACIP-list.htm*).*

January 2002

Contraindications and Precautions to Routine Childhood Vaccinations BY VACCINE

DTaP ■ Hepatitis A ■ Hepatitis B ■ Hib ■ IPV ■ MMR ■ Pneumococcal conjugate ■ Varicella

DTaP

Contraindications:
- Anaphylactic reaction to a prior dose of the vaccine or any of its components
- Encephalopathy within 7 days of a previous dose of DTP or DTaP

Precautions:
- Moderate or severe acute illness
- Underlying unstable, evolving neurologic disorder
- Any of these conditions within the specified time after a previous dose of DTP or DTaP
  - Fever of ≥40.5°C (105°F) unexplained by another cause (within 48 hours)
  - Collapse or shocklike state (within 48 hours)
  - Persistent, inconsolable crying lasting ≥3 hours (within 48 hours)
  - Seizure or convulsion (within 72 hours)
  - Guillian-Barré syndrome (within 6 weeks)

Hepatitis A

Contraindications:
- Anaphylactic reaction to a prior dose of the vaccine or any of its components (e.g., 2-phenoxyethanol, Alum)

Precautions:
- Moderate or severe acute illness

Hepatitis B

Contraindications:
- Anaphylactic reaction to a prior dose of the vaccine or any of its components (e.g., baker's yeast)

Precautions:
- Moderate or severe acute illness

HIB

Contraindications:
- Anaphylactic reaction to a prior dose of the vaccine or any of its components

Precautions:
- Moderate or severe acute illness

IPV

Contraindications:
- Anaphylactic reaction to a prior dose of the vaccine or any of its components (e.g., neomycin, streptomycin, polymyxin B)

Precautions:
- Moderate or severe acute illness
- Pregnancy[1]

Pneumococcal Conjugate

Contraindications:
- Anaphylactic reaction to a prior dose of the vaccine or any of its components

Precautions:
- Moderate or severe acute illness

MMR

Contraindications:
- Anaphylactic reaction to a prior dose of the vaccine or any of its components (e.g., gelatin, neomycin)
- Immunodeficiency[2]
- Pregnancy
- TB – untreated, active

Precautions:
- Moderate or severe acute illness
- Recent administration of antibody-containing blood products[3]
- Thrombocytopenia/thrombocytopenic purpura (now or by history)

Varicella

Contraindications:
- Anaphylactic reaction to a prior dose of the vaccine or any of its components (e.g., gelatin, neomycin)
- Immunodeficiency[4]
- Pregnancy
- TB – untreated, active

Precautions:
- Moderate or severe acute illness
- Recent administration of antibody-containing blood products[3]

[1]If a pregnant woman is at increased risk for infection and requires immediate protection against polio, IPV can be administered in accordance with the recommended schedule for adults.

[2]MMR vaccination is recommended for all asymptomatic HIV-infected persons who do not have evidence of severe immunosuppression for whom measles vaccination would otherwise be indicated. It should be considered for all symptomatic HIV-infected persons who do not have evidence of severe immunosuppression or of measles immunity.

[3]See ACIP General Recommendations for correct spacing.

[4]Varicella vaccination should be considered for asymptomatic or mildly symptomatic HIV infected children. Pure humoral immune deficiencies are not a contraindication to varicella vaccine.

*For more details, see appropriate ACIP recommendations (*http://www.cdc.gov/nip/publications/ACIP-list.htm*).*

January 2002

Summary of Rules for Childhood Immunization*

Adapted from ACIP, AAP, and AAFP by the Immunization Action Coalition, July 2002

Vaccine	Ages usually given and other guidelines	If child falls behind	Contraindications
DTaP (Diphtheria, tetanus, acellular pertussis) *Give IM*	• Give at 2m, 4m, 6m, 15–18m, 4–6yrs of age. • May give dose #1 as early as 6wks of age. • May give #4 as early as 12m of age if 6m have elapsed since #3 and the child is unlikely to return at age 15–18m. • Do not give DTaP to children ≥7yrs of age (give Td). • May give with all other vaccines. • It is preferable but not mandatory to use the same DTaP product for all doses.	• #2 & #3 may be given 4wks after previous dose. • #4 may be given 6m after #3. • If #4 is given before 4th birthday, wait at least 6m for #5 (4–6yrs of age). • If #4 is given after 4th birthday, #5 is not needed. • Do not restart series, no matter how long since previous dose.	Do not give if patient (1) has had an anaphylactic reaction to a prior dose or to any vaccine component or (2) has a moderate or severe acute illness. (Minor illness is not a reason to postpone vaccination.) **Contraindication for DTaP only:** Previous encephalopathy within 7d after DTP/DTaP. **Precautions for DTaP:** The following are precautions, not contraindications. When these conditions are present, the individual child's disease risk should be carefully assessed. In situations when the benefit outweighs the risk (e.g., community pertussis outbreak), vaccination should be considered. • T≥105°F (40.5°C) within 48hrs after previous dose. • Continuous crying lasting ≥3hrs within 48hrs after previous dose. • Previous convulsion within 3d after immunization. • Pale or limp episode or collapse within 48hrs after previous dose. • Unstable progressive neurologic problem (defer until stable).
DT *Give IM*	• Give to children <7yrs of age if child had a serious reaction to "P" in DTaP/DTP or if parents refuse the pertussis component. • May give with all other vaccines.		
Td *Give IM*	• Use Td, not TT, for persons ≥7yrs of age for all indications. • A booster dose is recommended for children 11–12yrs of age if 5yrs have elapsed since last dose. Then boost every 10yrs. • May give with all other vaccines.	• For those never vaccinated or with unknown vaccination history: give dose #1 now, give 2nd dose 4wks later, give 3rd dose 6m after #2, then give booster every 10yrs. • Do not restart series, no matter how long since prior dose.	
MMR (Measles, mumps, rubella) *Give SC*	• Give #1 at 12–15m of age. Give #2 at 4–6yrs of age. • Make sure that all children (and teens) over 4–6yrs of age have received both doses of MMR. • If a dose was given before 12m of age, it doesn't count as the first dose, so give #1 at 12–15m of age with a minimum interval of 4wks between these doses. • May give with all other vaccines. • If MMR and Var (and/or yellow fever vaccine) are not given on the same day, space them ≥28d apart.	• 2 doses of MMR are recommended for all children ≤18yrs of age. • Dose should be given whenever it is noted that a child is behind. Exception: If MMR and Var (and/or yellow fever vaccine) are not given on the same day, space them ≥28d apart. • Dose #2 can be given at any time if at least 28d have elapsed since dose #1 and both doses are administered after 1yr of age. • Do not restart the series, no matter how long since previous dose.	• Pregnancy or possibility of pregnancy within 4 weeks (use contraception). • If blood, plasma, and/or immune globulin were given in past 11m, see ACIP statement *General Recommendations on Immunization* regarding time to wait before vaccinating. • HIV is NOT a contraindication unless severely immunocompromised. • Immunocompromised persons (e.g., because of cancer, leukemia, lymphoma). **Note:** For patients on high-dose immunosuppressive therapy, consult ACIP recommendations regarding delay time. **Note:** MMR is not contraindicated if a PPD test was recently applied. If PPD and MMR weren't given on same day, delay PPD for 4–6wks after MMR.
Varicella (Var) (Chickenpox) *Give SC*	• Routinely give at 12–18m of age. • Vaccinate all children ≥12m of age including all adolescents who have not had chickenpox. • May use as postexposure prophylaxis if given within 3–5d. • May give with all other vaccines. • If Var and MMR (and/or yellow fever vaccine) are not given on the same day, space them ≥28d apart. • Do not withhold vaccine from children of pregnant women.	• Do not give to children <12m of age. • Susceptible children <13yrs of age should receive 1 dose. • Susceptible persons ≥13yrs of age should receive 2 doses 4–8wks apart. • Do not restart series, no matter how long since previous dose.	• Pregnancy or possibility of pregnancy within 4 weeks. • If blood, plasma, and/or immune globulin (IG or VZIG) were given in past 11m, see ACIP statement *General Recommendations on Immunization* regarding time to wait before vaccinating. • Persons immunocompromised due to high doses of systemic steroids, cancer, leukemia, lymphoma, or immunodeficiency. **Note:** For patients with humoral immunodeficiency, HIV infection, or leukemia, or for patients on high doses of systemic steroids, see ACIP recommendations. • For children taking salicylates, see ACIP recommendations.
Influenza *Give IM*	Vaccinate children ≥6m of age with risk factors and encourage vaccination of all children aged 6-23m when feasible. Consult the current year's ACIP statement *Prevention and Control of Influenza* for details.		
Meningococcal *Give SC*	Vaccinate children ≥2yrs of age with risk factors. Discuss disease risk and vaccine availability with college students. Consult ACIP statement on meningococcal disease (6/30/00) for details.		

*Rules for combination vaccines consist of those applicable to each of the components. For detailed information, see the ACIP statements which are published in the *MMWR*. To obtain them, visit www.cdc.gov/nip/publications/ACIP-list.htm or visit the Immunization Action Coalition's (IAC) website at www.immunize.org/acip. For recommendations of the American Academy of Pediatrics (AAP), consult AAP's *2000 Red Book* and the journal *Pediatrics*, or visit www.immunize.org/aap. For information about vaccine shortages in the United States, visit www.cdc.gov/nip/news/shortages

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www.immunize.org/catg.d/rules1.pdf • Item #P2010 (7/02)

Summary of Rules for Childhood Immunization (continued)

Vaccine	Ages usually given and other guidelines	If child falls behind	Contraindications
Polio (IPV) *Give SC or IM*	• Give at 2m, 4m, 6–18m, and 4–6yrs of age. • May give #1 as early as 6wks of age. • Not routinely recommended for those ≥18yrs of age (except certain travelers). • May give with all other vaccines.	• All doses should be separated by at least 4wks. • If #3 of an all-IPV or all-OPV series is given at ≥4yrs of age, dose #4 is not needed. • Those who receive a combination of IPV and OPV doses must receive all 4 doses. • Do not restart series, no matter how long since previous dose.	Do not give if patient (1) has had an anaphylactic reaction to a prior dose or to any vaccine component or (2) has a moderate or severe acute illness. (Minor illness is not a reason to postpone vaccination.)
Hib *Give IM*	• HibTITER (HbOC) & ActHib or OmniHib (PRP-T): give at 2m, 4m, 6m, 12–15m (booster dose). • PedvaxHIB or Comvax (containing PRP-OMP): give at 2m, 4m, 12–15m. • Dose #1 of Hib vaccine may be given as early as 6wks of age but no earlier. • The last dose (booster dose) is given no earlier than 12m of age and a minimum of 8wks after the previous dose. • May give with all other vaccines. • Hib vaccines are interchangeable; however, if different brands of Hib conjugate vaccines are administered, a total of three doses are necessary to complete the primary series in infants. • Any Hib vaccine may be used for the booster dose. • Hib is not routinely given to children ≥5yrs of age.	**Rules for all Hib vaccines:** • If #1 was given at 12–14m, give a booster dose in 8wks. • Give only 1 dose for unvaccinated children ≥15m and <5yrs of age. • Do not restart series, no matter how long since previous dose. **Rules for HibTITER, ActHib, and OmniHib:** • #2 and #3 may be given 4 wks after previous dose. • If #1 was given at 7–11m, only 3 doses are needed; #2 is given 4–8wks after #1, then boost at 12–15m. **Rules for PedvaxHiB:** • #2 may be given 4wks after dose #1	
Hepatitis B *Give IM*	• Vaccinate all newborns prior to hospital discharge. Give dose #2 at 1–4m, and dose #3 at 6–18m. After the first dose, the series may be completed with single-antigen vaccine or up to 3 doses of Comvax, e.g., 2m, 4m, 12m of age. Dose #1 can be given as late as 2m of age if the mother is assured to be HBsAg negative, but this is not the preferred schedule. • Vaccinate all children 0 through 18yrs of age. • For older children/teens, schedules include: 0-, 1-, 6-m; 0-, 2-, 4-m; 0-, 1-, 4-m. • Children born (or whose parents were born) in countries of high HBV endemicity or who have other risk factors should be vaccinated ASAP. • **If mother is HBsAg-positive:** give HBIG + dose #1 within 12hrs of birth, #2 at 1–2m, and #3 at 6m of age. • **If mother's HBsAg status is unknown:** give dose #1 within 12hrs of birth, #2 at 1–2m, and #3 at 6m of age. If mother is later found to be HBsAg positive, give infant HBIG within 7d of birth. • **Note:** For premature infants, hepatitis B vaccination recommendations may be different. Consult the *2000 Red Book* (p. 54). • May give with all other vaccines.	• Do not restart series, no matter how long since previous dose. • 3-dose series can be started at any age. • Minimum spacing for children and teens: 4wks between #1 & #2, and 8wks between #2 & #3. Overall there must be ≥16wks between #1 & #3. • The last dose in infant hepatitis B series should not be given earlier than 6m of age. **Dosing of hepatitis B vaccines:** Vaccine brands are interchangeable for 3-dose schedules. For Engerix-B, use 10mcg for 0 through 19yrs of age. For Recombivax HB, use 5mcg for 0 through 19yrs of age. **Alternative dosing schedule for unvaccinated adolescents aged 11 through 15yrs:** Give Recombivax HB two 10mcg doses (adult dosage) spaced 4–6m apart. (Engerix-B is not licensed for a 2-dose schedule.)	
Hepatitis A *Give IM*	• Vaccinate children ≥2yrs old who live in areas with consistently elevated rates of hepatitis A, as well as children who have specific risk factors. (See ACIP statement and column 3 of this table for details.) • Children who travel outside of the U.S. (except to Western Europe, New Zealand, Australia, Canada, or Japan). • Dose #2 is given a minimum of 6m after dose #1. • Dose #1 may not be given earlier than 2yrs of age. • May give with all other vaccines.	• Do not restart series, no matter how long since previous dose. • Hepatitis A vaccine brands are interchangeable. • Consult your local/state public health authority for information regarding your city, county, or state hepatitis A rates. States with consistently elevated rates (average ≥10 cases per 100,000 population from 1987-1997) include the following: AL, AZ, AK, CA, CO, ID, MO, MT, NV, NM, OK, OR, SD, TX, UT, WA, and WY.	
Pneumococcal — **PCV** *Give IM*	• Give at 2m, 4m, 6m, and 12–15m of age. • Dose #1 may be given as early as 6wks of age. • For unvaccinated high-risk children* 24–59m of age, give 2 doses. If PPV not previously given, administer ≥8wks after final dose of PCV. • For unvaccinated moderate-risk children† 24–59m of age, consider giving 1 dose. • May give 1 dose to unvaccinated healthy children 24–59m. • PCV is not routinely given to children ≥5 years of age. • May give with all other vaccines.	• Minimum interval for infants <12m of age is 4wks, for ≥12m of age is 8wks. • For infants 7–11m of age: If unvaccinated, give dose #1 now, give 2nd dose 4–8wks later, and boost at 12–15m. If infant has had 1 or 2 previous doses, give next dose now, and boost at 12–15m. • For infants 12–23 months: If not previously vaccinated or only one previous dose before 12m, give 2 doses ≥8wks apart. If infant previously had 2 doses, give booster dose ≥8 wks after previous dose. • Do not restart series, no matter how long since previous dose.	
	*High-risk children: Those with sickle cell disease; anatomic or functional asplenia; chronic cardiac, pulmonary, or renal disease; diabetes mellitus; CSF leak; HIV infection; or immunosuppression. †Moderate-risk children: Children aged 24–35m; children aged 24–59m who attend group daycare centers or are of Alaska Native, American Indian, or African American descent.		
	PPV *IM or SC*	Give PPV to high-risk children ≥2yrs of age as recommended in the ACIP statement *Prevention of Pneumococcal Disease* (4/4/97).	

Summary of Recommendations for Adult Immunization

Adapted from the Advisory Committee on Immunization Practices (ACIP) recommendations by the Immunization Action Coalition, June 2002

Vaccine name and route	For whom it is recommended	Schedule for routine and "catch-up" administration	Contraindications (mild illness is not a contraindication)
Influenza *Give IM*	• Adults who are 50yrs of age or older. • People 6m–50yrs of age with medical problems such as heart disease, lung disease, diabetes, renal dysfunction, hemoglobinopathies, immunosuppression, and/or people living in chronic care facilities. • People (≥6m of age) working or living with at-risk people. • Pregnant women who have underlying medical conditions should be vaccinated before influenza season, regardless of the stage of pregnancy. • Healthy pregnant women who will be in their 2nd or 3rd trimesters during influenza season. • All health care workers and those who provide key community services. • Travelers who go to areas where influenza activity exists or who may be among people from areas of the world where there is current influenza activity (e.g., on organized tours). • Anyone who wishes to reduce the likelihood of becoming ill with influenza.	• Given every year. • October through November is the *optimal* time to receive an annual flu shot to maximize protection. • Influenza vaccine may be given at any time during the influenza season (typically December through March) or at other times when the risk of influenza exists. • May give with all other vaccines.	• Previous anaphylactic reaction to this vaccine, to any of its components, or to eggs. • Moderate or severe acute illness. **Note:** Pregnancy and breastfeeding are not contraindications to the use of this vaccine.
Pneumococcal polysaccharide (PPV23) *Give IM or SC*	• Adults who are 65yrs of age or older. • People 2–64yrs of age who have chronic illness or other risk factors, including chronic cardiac or pulmonary diseases, chronic liver disease, alcoholism, diabetes mellitus, CSF leaks, as well as people living in special environments or social settings (including Alaska Natives and certain American Indian populations). Those at highest risk of fatal pneumococcal infection are people with anatomic asplenia, functional asplenia, or sickle cell disease; immunocompromised persons including those with HIV infection, leukemia, lymphoma, Hodgkin's disease, multiple myeloma, generalized malignancy, chronic renal failure, or nephrotic syndrome; persons receiving immunosuppressive chemotherapy (including corticosteroids); and those who received an organ or bone marrow transplant. Pregnant women with high-risk conditions should be vaccinated if not done previously.	• Routinely given as a one-time dose; administer if previous vaccination history is unknown. • One-time revaccination is recommended 5yrs later for people at highest risk of fatal pneumococcal infection or rapid antibody loss (e.g., renal disease) and for people ≥65yrs of age if the 1st dose was given prior to age 65 and ≥5yrs have elapsed since previous dose. • May give with all other vaccines.	• Previous anaphylactic reaction to this vaccine or to any of its components. • Moderate or severe acute illness. **Note:** Pregnancy and breastfeeding are not contraindications to the use of this vaccine.
Hepatitis B (Hep-B) *Give IM* Brands may be used interchangeably.	• All adolescents. • High-risk adults, including household contacts and sex partners of HBsAg-positive persons; users of illicit injectable drugs; heterosexuals with more than one sex partner in 6 months; men who have sex with men; people with recently diagnosed STDs; patients receiving hemodialysis and patients with renal disease that may result in dialysis; recipients of certain blood products; health care workers and public safety workers who are exposed to blood; clients and staff of institutions for the developmentally disabled; inmates of long-term correctional facilities; and certain international travelers. **Note:** Prior serologic testing may be recommended depending on the specific level of risk and/or likelihood of previous exposure. **Note:** In 1997, the NIH Consensus Development Conference, a panel of national experts, recommended that hepatitis B vaccination be given to all anti-HCV positive persons. **Ed. note:** Provide serologic screening for immigrants from endemic areas. When HBsAg-positive persons are identified, offer appropriate disease management. In addition, screen their sex partners and household members and, if found susceptible, vaccinate.	• Three doses are needed on a 0, 1, 6m schedule. • Alternative timing options for vaccination include 0, 2, 4m and 0, 1, 4m. • There must be 4wks between doses #1 and #2, and 8wks between doses #2 and #3. Overall there must be at least 16wks between doses #1 and #3. • **Schedule for those who have fallen behind:** If the series is delayed between doses, DO NOT start the series over. Continue from where you left off. • May give with all other vaccines. For Twinrix™ (hepatitis A and B combination vaccine [GSK]) three doses are needed on a 0, 1, 6m schedule.	• Previous anaphylactic reaction to this vaccine or to any of its components. • Moderate or severe acute illness. **Note:** Pregnancy and breastfeeding are not contraindications to the use of this vaccine.
Hepatitis A (Hep-A) *Give IM* Brands may be used interchangeably.	• People who travel outside of the U.S. (except for Western Europe, New Zealand, Australia, Canada, and Japan). • People with chronic liver disease, including people with hepatitis C; people with hepatitis B who have chronic liver disease; illicit drug users; men who have sex with men; people with clotting-factor disorders; people who work with hepatitis A virus in experimental lab settings (not routine medical laboratories); and food handlers when health authorities or private employers determine vaccination to be cost effective. **Note:** Prevaccination testing is likely to be cost effective for persons >40yrs of age as well as for younger persons in certain groups with a high prevalence of hepatitis A virus infection.	• Two doses are needed. • The minimum interval between dose #1 and #2 is 6m. • If dose #2 is delayed, do not repeat dose #1. Just give dose #2. • May give with all other vaccines.	• Previous anaphylactic reaction to this vaccine or to any of its components. • Moderate or severe acute illness. • Safety during pregnancy has not been determined, so benefits must be weighed against potential risk. **Note:** Breastfeeding is not a contraindication to the use of this vaccine.

For specific ACIP immunization recommendations refer to the statements, which are published in *MMWR*. To obtain a complete set of ACIP statements, call (800) 232-2522, or to access individual statements, visit CDC's website: www.cdc.gov/nip/publications/ACIP-list.htm or visit IAC's website: www.immunize.org/acip

This table is revised yearly due to the changing nature of U.S. immunization recommendations. Visit the Immunization Action Coalition's website at www.immunize.org/adultrules to make sure you have the most current version. The Coalition thanks the following individuals for all their help: William Atkinson, MD, from CDC's National Immunization Program, and Linda Moyer, RN, and Harold Margolis, MD, both from the Division of Viral Hepatitis, at CDC's National Center for Infectious Diseases. This table is published by the Immunization Action Coalition, 1573 Selby Avenue, St. Paul, MN 55104, (651) 647-9009. E-mail: admin@immunize.org

Item #P2011 (6/02)

Summary of Recommendations for Adult Immunization

Vaccine name and route	For whom it is recommended	Schedule for routine and "catch-up" administration	Contraindications (mild illness is not a contraindication)
Td (Tetanus, diphtheria) *Give IM*	• All adolescents and adults. • After the primary series has been completed, a booster dose is recommended every 10yrs. Make sure your patients have received a primary series of 3 doses. • A booster dose as early as 5yrs later may be needed for the purpose of wound management, so consult ACIP recommendations.	• Give booster dose every 10yrs after the primary series has been completed. • For those who are unvaccinated or behind, complete the primary series (spaced at 0, 1–2m, 6–12m intervals). Don't restart the series, no matter how long since the previous dose. • May give with all other vaccines.	• Previous anaphylactic or neurologic reaction to this vaccine or to any of its components. • Moderate or severe acute illness. **Note:** Pregnancy and breastfeeding are not contraindications to the use of this vaccine.
MMR (Measles, mumps, rubella) *Give SC*	• Adults born in 1957 or later who are ≥18yrs of age (including those born outside the U.S.) should receive at least one dose of MMR if there is no serologic proof of immunity or documentation of a dose given on or after the first birthday. • Adults in high-risk groups, such as health care workers, students entering colleges and other post–high school educational institutions, and international travelers, should receive a total of two doses. • Adults born before 1957 are usually considered immune but proof of immunity may be desirable for health care workers. • All women of childbearing age (i.e., adolescent girls and premenopausal adult women) who do not have acceptable evidence of rubella immunity or vaccination. • Special attention should be given to immunizing women born outside the United States in 1957 or later.	• One or two doses are needed. • If dose #2 is recommended, give it no sooner than 4wks after dose #1. • May give with all other vaccines. • If varicella vaccine and MMR are both needed and are not administered on the same day, space them at least 4wks apart. • If a pregnant woman is found to be rubella-susceptible, administer MMR postpartum.	• Previous anaphylactic reaction to this vaccine, or to any of its components. • Pregnancy or possibility of pregnancy within 4 weeks (use contraception). • Persons immunocompromised due to cancer, leukemia, lymphoma, immunosuppressive drug therapy, including high-dose steroids or radiation therapy. **Note:** HIV positivity is NOT a contraindication to MMR except for those who are severely immunocompromised. • If blood, plasma, and/or immune globulin were given in past 11m, see ACIP statement *General Recommendations on Immunization* regarding time to wait before vaccinating. • Moderate or severe acute illness. **Note:** Breastfeeding is not a contraindication to the use of this vaccine. **Note:** MMR is not contraindicated if a PPD test was recently applied. If PPD and MMR not given on same day, delay PPD for 4–6wks after MMR.
Varicella (Var) (Chickenpox) *Give SC*	All susceptible adults and adolescents should be vaccinated. It is especially important to ensure vaccination of the following groups: susceptible persons who have close contact with persons at high risk for serious complications (e.g., health care workers and family contacts of immunocompromised persons) and susceptible persons who are at high risk of exposure (e.g., teachers of young children, day care employees, residents and staff in institutional settings such as colleges and correctional institutions, military personnel, adolescents and adults living with children, non-pregnant women of childbearing age, and international travelers who do not have evidence of immunity). **Note:** People with reliable histories of chickenpox (such as self or parental report of disease) can be assumed to be immune. For adults who have no reliable history, serologic testing may be cost effective since most adults with a negative or uncertain history of varicella are immune.	• Two doses are needed. • Dose #2 is given 4–8wks after dose #1. • May give with all other vaccines. • If varicella vaccine and MMR are both needed and are not administered on the same day, space them at least 4wks apart. • If the second dose is delayed, do not repeat dose #1. Just give dose #2.	• Previous anaphylactic reaction to this vaccine or to any of its components. • Pregnancy or possibility of pregnancy within 4 weeks (use contraception). • Immunocompromised persons due to malignancies and primary or acquired cellular immunodeficiency including HIV/AIDS. (See *MMWR* 1999, Vol. 28, No. RR-6.) **Note:** For those on high-dose immunosuppressive therapy, consult ACIP recommendations regarding delay time. • If blood, plasma, and/or immune globulin (IG or VZIG) were given in past 11m, see ACIP statement *General Recommendations on Immunization* regarding time to wait before vaccinating. • Moderate or severe acute illness. **Note:** Breastfeeding is not a contraindication to the use of this vaccine. **Note:** Manufacturer recommends that salicylates be avoided for 6wks after receiving varicella vaccine because of a theoretical risk of Reye's syndrome.
Polio (IPV) *Give IM or SC*	Not routinely recommended for persons 18yrs of age and older. **Note:** Adults living in the U.S. who never received or completed a primary series of polio vaccine need not be vaccinated unless they intend to travel to areas where exposure to wild-type virus is likely. Previously vaccinated adults can receive one booster dose if traveling to polio endemic areas.	• Refer to ACIP recommendations regarding unique situations, schedules, and dosing information. • May give with all other vaccines.	• Previous anaphylactic or neurologic reaction to this vaccine or to any of its components. • Moderate or severe acute illness. **Note:** Pregnancy and breastfeeding are not contraindications to the use of this vaccine.
Meningococcal *Give SC*	Vaccinate people with risk factors. Discuss disease risk and vaccine availability with college students. Consult ACIP statement on meningococcal disease (6/30/00) for details.		

Patient name: _____ Date of birth: ____/____/____
(mo.) (day) (yr.)

Screening Questionnaire for Child and Teen Immunization

For parents/guardians: The following questions will help us determine which vaccines may be given today. If a question is not clear, please ask the nurse or doctor to explain it.

	Yes	No	Don't Know
1. Is the child sick today?	☐	☐	☐
2. Does the child have allergies to medications, food, or any vaccine?	☐	☐	☐
3. Has the child had a serious reaction to a vaccine in the past?	☐	☐	☐
4. Has the child had a seizure or a brain problem?	☐	☐	☐
5. Does the child have cancer, leukemia, AIDS, or any other immune system problem?	☐	☐	☐
6. Has the child taken cortisone, prednisone, other steroids, or anticancer drugs, or had x-ray treatments in the past 3 months?	☐	☐	☐
7. Has the child received a transfusion of blood or blood products, or been given a medicine called immune (gamma) globulin in the past year?	☐	☐	☐
8. Is the child/teen pregnant or is there a chance she could become pregnant during the next month?	☐	☐	☐
9. Has the child received any vaccinations in the past 4 weeks?	☐	☐	☐

Form completed by: _____ Date: _____

Did you bring your child's immunization record card with you? yes ☐ no ☐

It is important to have a personal record of your child's vaccinations. If you don't have a record card, ask the child's health care provider to give you one! Bring this record with you every time you seek medical care for your child. Make sure your health care provider records all your child's vaccinations on it. Your child will need this card to enter daycare, kindergarten, junior high, etc.

Item #P4060 (1/02)

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A

Understanding the Screening Questionnaire for Child & Teen Immunization

The information below has been adapted from CDC's *Guide to Contraindications to Childhood Vaccinations*, Oct. 2000, and *Epidemiology & Prevention of Vaccine-Preventable Diseases*, W.L. Atkinson et al., editors, CDC, 6th edition, Jan. 2000.

1. Is the child sick today?
There is no evidence that acute illness reduces vaccine efficacy or increases vaccine adverse events (1, 2). However, with moderate or severe acute illness, all vaccines should be delayed until the illness has improved. Mild illnesses (such as otitis media, upper respiratory infections, and diarrhea) are NOT contraindications to vaccination. Do not withhold vaccination if a person is taking antibiotics.

2. Does the child have allergies to medications, food, or any vaccine?
History of anaphylactic reaction such as hives (urticaria), wheezing or difficulty breathing, or circulatory collapse or shock (not fainting) from a previous dose of vaccine or vaccine component is a contraindication for further doses. For example, if a person experiences anaphylaxis after eating eggs, do not administer influenza vaccine, or if a person has anaphylaxis after eating gelatin, do not administer MMR or varicella vaccine. Local reactions (e.g., a red eye following instillation of ophthalmic solution) are not contraindications. For an extensive table of vaccine components, see reference 3.

3. Has the child had a serious reaction to a vaccine in the past?
History of anaphylactic reaction (see question 2) to a previous dose of vaccine or vaccine component is a contraindication for subsequent doses. History of encephalopathy within 7 days following DTP/DTaP is a contraindication for further doses of pertussis-containing vaccine. Precautions to pertussis-containing vaccines include the following: (a) seizure within 3 days of a dose, (b) pale or limp episode or collapse within 48 hours of a dose, (c) continuous crying for 3 hours within 48 hours of a dose, and (d) fever of 105°F (40°C) within 48 hours of a previous dose. There are other serious reactions to vaccines that constitute contraindications or precautions (4). Under normal circumstances, vaccines are deferred when a precaution is present. However, situations may arise when the benefit outweighs the risk (e.g., community pertussis outbreak).

4. Has the child had a seizure or a brain problem?
DTaP is contraindicated in children who have a history of encephalopathy within 7 days following DTP/DTaP. An unstable progressive neurologic problem is a precaution to the use of DTP/DTaP. For children with stable neurologic disorders (including seizures) unrelated to vaccination, or for children with a family history of seizure, vaccinate as usual but consider the use of acetaminophen or ibuprofen to minimize fever.

5. Does the child have cancer, leukemia, AIDS, or any other immune system problem?
Live virus vaccines (e.g., MMR, varicella) are usually contraindicated in immunocompromised children. However, there are exceptions. For example, MMR and varicella vaccines are recommended for asymptomatic HIV-infected children who do not have evidence of severe immunosuppression. For details, consult the ACIP recommendations (5, 6).

6. Has the child taken cortisone, prednisone, other steroids, or anticancer drugs, or had x-ray treatments in the past 3 months?
Live virus vaccines (e.g., MMR, varicella) should be postponed until after chemotherapy or long-term high-dose steroid therapy has ended. For details and length of time to postpone, consult the ACIP statement (1). To find specific vaccination schedules for stem cell transplant (bone marrow transplant) patients, see reference 7.

7. Has the child received a transfusion of blood or blood products, or been given a medicine called immune (gamma) globulin in the past year?
Live virus vaccines (e.g., MMR, varicella) may need to be deferred, depending on several variables. Consult the *2000 Red Book*, p. 390 (2), for the most current information on intervals between immune globulin or blood product administration and MMR or varicella vaccination.

8. Is the child/teen pregnant or is there a chance she could become pregnant during the next month?
Live virus vaccines (e.g., MMR, varicella) are contraindicated prior to and during pregnancy due to the theoretical risk of virus transmission to the fetus. Sexually active young women who receive MMR or varicella vaccination should be instructed to practice careful contraception for one month following receipt of either vaccine (8, 9). Different inactivated vaccines may be given to a pregnant woman whenever indicated.

9. Has the child received any vaccinations in the past 4 weeks?
If two live virus vaccines (e.g., MMR, varicella) are not given on the same day, the doses must be separated by at least 28 days. Different inactivated vaccines may be given at any spacing interval if they are not administered simultaneously.

1. CDC. General recommendations on immunization. *MMWR* 1994; 34 (RR-1).
2. AAP. *2000 Red Book: Report of the Committee on Infectious Diseases*. 25th ed. Elk Grove Village, IL: AAP; 2000.
3. Visit the website: www.cdc.gov/nip/publications/pink/vaxcont.pdf
4. CDC. Guide to contraindications to childhood vaccinations. Oct. 2000. Available online at: www.cdc.gov/nip/recs/contraindications.pdf
5. CDC. Measles, mumps, and rubella—vaccine use and strategies for elimination of measles, rubella, and congenital rubella syndrome and control of mumps. *MMWR* 1998; 47 (RR-8).
6. CDC. Prevention of varicella: updated recommendations of the ACIP. *MMWR* 1999; 48 (RR-6).
7. CDC. Guidelines for preventing opportunistic infections among hematopoietic stem cell transplant recipients. *MMWR* 2000; 49 (RR-10).
8. CDC. Notice to readers: Revised ACIP recommendation for avoiding pregnancy after receiving a rubella-containing vaccine. *MMWR* 2001; 50 (49).
9. CDC. Prevention of varicella. *MMWR* 1996; 45 (RR-11).

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Patient name: _____ Date of birth: ____/____/____
(mo.) (day) (yr.)

Screening Questionnaire for Adult Immunization

For patients: The following questions will help us determine which vaccines may be given today. If a question is not clear, please ask your health care provider to explain it.

	Yes	No	Don't Know
1. Are you sick today?	☐	☐	☐
2. Do you have allergies to medications, food, or any vaccine?	☐	☐	☐
3. Have you ever had a serious reaction after receiving a vaccination?	☐	☐	☐
4. Do you have cancer, leukemia, AIDS, or any other immune system problem?	☐	☐	☐
5. Do you take cortisone, prednisone, other steroids, or anticancer drugs, or have you had x-ray treatments?	☐	☐	☐
6. During the past year, have you received a transfusion of blood or blood products, or been given a medicine called immune (gamma) globulin?	☐	☐	☐
7. For women: Are you pregnant or is there a chance you could become pregnant during the next month?	☐	☐	☐
8. Have you received any vaccinations in the past 4 weeks?	☐	☐	☐

Form completed by: _____ Date: _____

Did you bring your immunization record card with you? **yes** ☐ **no** ☐

It is important for you to have a personal record of your vaccinations. If you don't have a record card, ask your health care provider to give you one! Bring this record with you every time you seek medical care. Make sure your health care provider records all your vaccinations on it.

Item #P4065 (1/02)

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A

Understanding the Screening Questionnaire for Adult Immunization

The information below has been adapted from *Epidemiology & Prevention of Vaccine-Preventable Diseases*, WL Atkinson et al., editors, CDC, 6th edition, Jan. 2000, and CDC's *Guide to Contraindications to Childhood Vaccinations*, Oct. 2000.

1. Are you sick today?
There is no evidence that acute illness reduces vaccine efficacy or increases vaccine adverse events (1, 2). However, with moderate or severe acute illness, all vaccines should be delayed until the illness has improved. Mild illnesses (such as upper respiratory infections or diarrhea) are NOT contraindications to vaccination. Do not withhold vaccination if a person is taking antibiotics.

2. Do you have allergies to medications, food, or any vaccine?
History of anaphylactic reaction such as hives (urticaria), wheezing or difficulty breathing, or circulatory collapse or shock (not fainting) from a previous dose of vaccine or vaccine component is a contraindication for further doses. For example, if a person experiences anaphylaxis after eating eggs, do not administer influenza vaccine, or if a person has anaphylaxis after eating gelatin, do not administer MMR or varicella vaccine. Local reactions (e.g., a red eye following instillation of ophthalmic solution) are not contraindications. For an extensive table of vaccine components, see reference 3.

3. Have you ever had a serious reaction after receiving a vaccination?
History of anaphylactic reaction (see question 2) to a previous dose of vaccine or vaccine component is a contraindication for subsequent doses (4). Under normal circumstances, vaccines are deferred when a precaution is present. However, situations may arise when the benefit outweighs the risk (e.g., community measles outbreak).

4. Do you have cancer, leukemia, AIDS, or any other immune system problem?
Live virus vaccines (e.g., MMR, varicella) are usually contraindicated in immunocompromised people. However, there are exceptions. For example, MMR is recommended for asymptomatic HIV-infected individuals who do not have evidence of severe immunosuppression. For details, consult the ACIP recommendations (5, 6).

5. Do you take cortisone, prednisone, other steroids, or anticancer drugs, or have you had x-ray treatments?
Live virus vaccines (e.g., MMR, varicella) should be postponed until after chemotherapy or long-term high-dose steroid therapy has ended. For details and length of time to postpone, consult the ACIP statement (1). To find specific vaccination schedules for stem cell transplant (bone marrow transplant) patients, see reference 7.

6. During the past year, have you received a transfusion of blood or blood products, or been given a medicine called immune (gamma) globulin?
Live virus vaccines (e.g., MMR, varicella) may need to be deferred, depending on several variables. Consult the ACIP Statement "General Recommendations on Immunization" (1) or *2000 Red Book*, p. 390 (2), for the most current information on intervals between immune globulin or blood product administration and MMR or varicella vaccination.

7. For women: Are you pregnant or is there a chance you could become pregnant during the next month?
Live virus vaccines (e.g., MMR, varicella) are contraindicated prior to and during pregnancy due to the theoretical risk of virus transmission to the fetus. Sexually active women in their child-bearing years who receive MMR or varicella vaccination should be instructed to practice careful contraception for one month following receipt of either vaccine (8, 9). Inactivated vaccines may be given to a pregnant woman whenever indicated.

8. Have you received any vaccinations in the past 4 weeks?
If two live virus vaccines (e.g., MMR, varicella, yellow fever) are not given on the same day, the doses must be separated by at least 28 days. Inactivated vaccines may be given at any spacing interval if they are not administered simultaneously. (For travelers, consult the Yellow Book (10).)

1. CDC. General recommendations on immunization. *MMWR* 1994; 34 (RR-1).
2. AAP. *2000 Red Book: Report of the Committee on Infectious Diseases.* 25th ed. Elk Grove Village, IL: AAP, 2000.
3. Visit the website: www.cdc.gov/nip/publications/pink/vaxcont.pdf
4. CDC. Guide to contraindications to childhood vaccinations. Oct. 2000. Available online at: www.cdc.gov/nip/recs/contraindications.pdf
5. CDC. Measles, mumps, and rubella—vaccine use and strategies for elimination of measles, rubella, and congenital rubella syndrome and control of mumps. *MMWR* 1998; 47 (RR-8).
6. CDC. Prevention of varicella: updated recommendations of the ACIP. *MMWR* 1999; 48 (RR-6).
7. CDC. Guidelines for preventing opportunistic infections among hematopoietic stem cell transplant recipients. *MMWR* 2000; 49 (RR-10).
8. CDC. Notice to readers: Revised ACIP recommendation for avoiding pregnancy after receiving a rubella-containing vaccine. *MMWR* 2001; 50 (49).
9. CDC. Prevention of varicella. *MMWR* 1996; 45 (RR-11).
10. CDC. Health Information for International Travel, 1999-2000, DHHS, Atlanta, GA.

Your name: _____ Date of birth: ___/___/___ (mo./day/yr.) Today's date: ___/___/___ (mo./day/yr.)

Do I Need Any Vaccinations Today?

Many adults are behind on their vaccinations. Do you know if you are completely up to date? These checklists will help you determine if you need any vaccinations today. Please check the boxes that pertain to you.

Influenza vaccination

❑ I am 50 years of age or older, so I should get a flu shot.

❑ I am less than 50 years old, and I have one or more of the following, so I should get a flu shot:

- ___ lung disease
- ___ heart disease
- ___ kidney disease
- ___ diabetes mellitus
- ___ HIV/AIDS
- ___ a disease that affects the immune system
- ___ I live in a nursing home or chronic care facility.
- ___ I live with someone who is in one of the above risk groups.
- ___ I will be in my 2nd or 3rd trimester of pregnancy during influenza season (December–March).
- ___ I am a health care worker.
- ___ I provide essential community services.

❑ I am not in one of the groups listed above, but I'd like a flu shot to avoid getting influenza this season.

Pneumococcal vaccination

❑ I am 65 years of age or older, and I have never had a dose of pneumococcal vaccine, so I need this vaccination.

❑ I am 65 years of age or older, had a previous dose when I was under 65, and it has been at least 5 years since that dose, so I need a second dose now.

❑ I am less than 65 years old, and I have one of the following health problems, and I have never had a dose of pneumococcal vaccine, so I need this vaccination.

- ___ lung disease (not asthma)
- ___ heart disease
- ___ diabetes mellitus
- ___ kidney disease
- ___ liver disease
- ___ cerebrospinal fluid leak
- ___ alcoholism

❑ I am less than 65 years old, and I have one of the following health problems listed below that puts me at high risk for pneumococcal disease and:

❑ I have never had a dose of pneumococcal vaccine, so I need two doses spaced 5 years apart.

❑ It has been at least 5 years since my first dose of pneumococcal vaccine, so I need a second dose now.

- ___ sickle cell disease
- ___ had my spleen removed
- ___ HIV/AIDS
- ___ Hodgkin's disease
- ___ leukemia
- ___ on medication or receiving x-ray treatment that affects my immune system
- ___ organ or bone marrow transplant
- ___ lymphoma
- ___ multiple myeloma
- ___ generalized malignancy

Approximate date that I last had pneumococcal vaccine: _____

Tetanus-diphtheria (Td) vaccination

❑ I have not yet had at least 3 Td shots in my lifetime (usually given as DTP in childhood), so I need to be vaccinated now with one or more doses to bring me up to date, and then I will need one dose every 10 years.

❑ I have had at least 3 Td shots (or DTPs) in my lifetime, but I think it's been 10 years or more since I received my last Td, so I need one dose now, and subsequently I will need one dose every 10 years.

Approximate date(s) that I had my last Td(s): _____

❑ I have no idea if I ever received Td vaccination in school, the military, or elsewhere, so I probably need to be vaccinated and will talk with my doctor about how many doses I should receive.

Item #P4036 (3/02)

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Hepatitis A vaccination

❑ I am in one of the following risk groups, **but I do not wish to disclose which one,** so I need to be vaccinated.

❑ I am in one of the following risk groups, so I need to be vaccinated:

___ I travel outside of the U.S., Western Europe, Canada, Japan, Australia, and New Zealand.*

___ I live in a community where cases of hepatitis A are occurring and I am 18 or younger.

___ I am a man who has sex with men.

___ I use street drugs.

___ I have chronic liver disease.

___ I have a clotting factor disorder.

Hepatitis B vaccination

❑ I am in one of the following risk groups, **but I do not wish to disclose which one,** so I need to be vaccinated.

❑ I am in one of the following risk groups, so I need to be vaccinated:

___ I live with a person who has hepatitis B.

___ I have a bleeding disorder that requires transfusion.

___ I am or will be on kidney dialysis.

___ I am an immigrant from an area of the world with moderate or high rates of hepatitis B.†

___ I inject street drugs.

___ I am a sex partner of a person with hepatitis B.

___ I've been treated for a sexually transmitted disease.

___ I have or had more than one sex partner during a 6-month time period.

___ I am a man who has sex with men.

___ I am a health care or public safety worker who is exposed to blood.

___ I provide direct services for people with developmental disabilities.

___ I travel outside of the U.S.*† and plan to stay for 6 months or longer.

Measles-Mumps-Rubella (MMR) vaccination

❑ I was born after 1956 and never received a dose of MMR, so I need to be vaccinated.

❑ I am a woman thinking about a future pregnancy and do not know if I'm immune to rubella, so I need to be tested or vaccinated.

❑ I am included in one of the following groups for whom two doses of MMR are recommended, but I have only received one dose of MMR, so I need a second dose.

___ I am a health care worker.

___ I travel internationally.

___ I am entering college or a post–high-school educational institution.

___ I had a rubella titer that shows I do not have immunity.

Chickenpox (Varicella) vaccination

❑ I have never had chickenpox, so I need to be tested or vaccinated.

❑ I'm not sure if I've had chickenpox or not, so I need to be tested or vaccinated.

❑ I may become pregnant and do not know if I'm immune to chickenpox, so I need to be tested or vaccinated.

Meningococcal vaccination

❑ I am (or I'll be) a college freshman living in a dorm, so tell me more about the meningococcal vaccine.

❑ I am traveling to an area of the world where meningococcal disease is common, so I need to be vaccinated.*

❑ I have sickle cell disease, or a spleen that isn't working or has been removed, so I need to be vaccinated.

Haemophilus influenzae type b (Hib) vaccination

❑ I have one of the following health conditions: HIV infection, bone marrow transplant, sickle cell disease or a spleen that isn't working or has been removed, so I need to be vaccinated.

*Call your local travel clinic to find out if additional vaccines are recommended.

† Adults from these areas should be tested for hepatitis B infection prior to vaccination. Areas with high rates of hepatitis B include: Africa; China; Korea; Southeast Asia including Indonesia and the Philippines; the Middle East except Israel; South and Western Pacific Islands; interior Amazon Basin; and certain parts of the Caribbean, i.e., Haiti and the Dominican Republic. Areas of moderate endemicity include South Central and Southwest Asia, Israel, Japan, Eastern and Southern Europe, Russia, and most of Central and South America.

Shots may hurt a little . . .
but the disease can hurt a lot!

After the Shots . . .

What to do if your child has discomfort

Your child may need extra love and care after getting immunized. Many of the shots that protect children from serious diseases can also cause discomfort for a while. Here are answers to questions many parents have about the fussiness, fever, and pain their children may experience after they have been immunized. If you don't find the answers to your questions, call the clinic!

My clinic phone number: _____

My child has been fussy since you immunized him/her. What should I do?
After immunization, children may be fussy due to pain and/or fever. You may want to give your child acetaminophen, a medicine that helps to reduce pain and fever. Some examples of acetaminophen are Tylenol, Panadol, and Tempra. DO NOT GIVE ASPIRIN. See chart below. If the fussiness lasts for more than 24 hours, you should call the clinic.

My child's arm (or leg) is swollen, hot, and red. What should I do?
- A clean, cool washcloth may be applied over the sore area as needed for comfort.
- If there is increasing redness or tenderness after 24 hours, call the clinic.
- For pain, give acetaminophen. See chart below. DO NOT GIVE ASPIRIN.

I think my child has a fever. What should I do?
Check your child's temperature to find out if there is a fever. The most accurate way to do this is by taking a rectal temperature. (Be sure to use a lubricant, such as petroleum jelly, when doing so.) If your child's fever is 105°F or higher by rectum, you need to call the clinic.

If you take the temperature by mouth (for an older child) or under the arm, these temperatures are generally lower and may be less accurate. Call your clinic if you are concerned about these temperatures.

Here are some things you can do to reduce fever:
- Give your child plenty to drink.
- Clothe your child lightly. Do not cover or wrap your child tightly!
- Give your child acetaminophen. DO NOT USE ASPIRIN.
- Sponge your child in a few inches of lukewarm (not cold!) bath water.

My child seems really sick. Should I call the doctor?
If you are worried AT ALL about how your child looks or feels, please call the clinic!

Call the clinic if you answer "yes" to any of the following questions:
- Does your child have a rectal temperature of 105°F or higher?

  (Remember, a temperature taken under the arm or by mouth usually registers lower than a rectal temperature. You should call the clinic if you are concerned about these temperatures.)
- Is your child pale or limp?
- Has your child been crying for over 3 hours and just won't quit?
- Does your child have a strange cry that isn't normal (a high-pitched cry)?
- Is your child's body shaking, twitching, or jerking?

How much fever-reducing medicine (acetaminophen) should I give my child?

Dose of acetaminophen to be given every 4–6 hours, by age or by weight				
1–3 months 6–11 lbs.	4–11 months 12–17 lbs.	12–23 months 18–23 lbs.	2–3 years 24–35 lbs.	4–5 years 36–47 lbs.
1/2 dropperful infant drops*	1 dropperful infant drops* or 1/2 teaspoon children's liquid*	1 1/2 droppersful infant drops* or 3/4 teaspoon children's liquid*	2 chewable (80mg) tablets* or 1 teaspoon* children's liquid	3 chewable (80 mg) tablets* or 1 1/2 teaspoons children's liquid*

*Consult your pharmacist to be sure you choose the correct dose and formula for your child.

Adapted from the State of California,
Immunization Branch
by the Immunization Action Coalition
1573 Selby Avenue, St. Paul, MN 55104
(651) 647-9009
www.immunize.org

Item#P4015 (8/99)

Vaccine Administration Record for Children and Teens

Patient name: _____

Birthdate:

Chart number: _____

Before administering any vaccines, give the parent/guardian all appropriate copies of Vaccine Information Statements (VISs) and make sure they understand the risks and benefits of the vaccine(s). Update the patient's personal record card or provide a new one whenever you administer vaccine.

Vaccine	Type of Vaccine* (generic abbreviation)	Date given (mo/day/yr)	Route	Site given (RA, LA, RT, LT)	Vaccine		Vaccine Information Statement		Signature/ initials of vaccinator
					lot #	mfr.	Date on VIS§	Date given§	
Hepatitis B† (e.g., HepB, Hib-HepB, DTaP-HepB-IPV)			IM						
			IM						
			IM						
			IM						
Diphtheria, Tetanus, Pertussis† (e.g, DTaP, DT, DTaP-Hib, DTaP-HepB-IPV, Td)			IM						
			IM						
			IM						
			IM						
			IM						
			IM						
			IM						
***Haemophilus influenzae* type b**† (e.g., Hib, Hib-HepB, DTaP-Hib)			IM						
			IM						
			IM						
			IM						
Polio† (e.g, IPV, DTaP-HepB-IPV)			IM•SC						
			IM•SC						
			IM•SC						
			IM•SC						
Pneumococcal conjugate (PCV)			IM						
			IM						
			IM						
			IM						
Measles, Mumps, Rubella (MMR)			SC						
			SC						
Varicella (Var)			SC						
			SC						
Hepatitis A** (HepA)			IM						
			IM						
Influenza** (Flu)			IM						
			IM						
			IM						
			IM						
			IM						
Other**									
Other**									

*Record the generic abbreviation for the type of vaccine given (e.g., DTaP-Hib, PCV), *not* the trade name.

†For combination vaccines, fill in the row for each individual antigen composing the combination.

§Record the publication date of each VIS as well as the date it is given to the patient. According to federal law, VISs must be given to patients (or parent/guardian of a minor child) before administering each dose of DTaP, Td, Hib, polio, MMR, varicella, PCV, or HepB vaccine, or combinations thereof.

**Influenza, pneumococcal polysaccharide (PPV23), hepatitis A, and/or meningococcal vaccines are recommended for certain high-risk children.

www.immunize.org/catg.d/p2022b.pdf • Item #P2022 (4/03)

Vaccine Administration Record for Adults

Patient name: _____

Birthdate: _____

Chart number: _____

Before administering any vaccines, give the patient copies of all pertinent Vaccine Information Statements (VISs) and make sure he/she understands the risks and benefits of the vaccine(s). Update the patient's personal record card or provide a new one whenever you administer vaccine.

Vaccine	Type of Vaccine* (generic abbreviation)	Date given (mo/day/yr)	Route	Site given (RA, LA)	Vaccine		Vaccine Information Statement		Signature/ initials of vaccinator
					lot #	mfr.	Date on VIS§	Date given§	
Tetanus and Diphtheria (e.g., Td)			IM						
			IM						
			IM						
			IM						
			IM						
Hepatitis A† (e.g, HepA, HepA-HepB)			IM						
			IM						
			IM						
Hepatitis B† (e.g., HepB, HepA-HepB)			IM						
			IM						
			IM						
Measles, Mumps, Rubella (MMR)			SC						
			SC						
Varicella (Var)			SC						
			SC						
Pneumococcal** (PPV)			IM•SC						
			IM•SC						
Influenza (Flu)			IM						
			IM						
			IM						
			IM						
			IM						
			IM						
			IM						
			IM						
			IM						
			IM						
			IM						
			IM						
			IM						
			IM						
			IM						
			IM						
			IM						
			IM						
			IM						
Other									
Other									

*Record the generic abbreviation for the type of vaccine given (e.g., PPV, HepA-HepB), *not* the trade name.

†For combination vaccines, fill in the row for each individual antigen composing the combination.

§Record the publication date of each VIS as well as the date it is given to the patient. According to federal law, VISs must be given to patients before administering each dose of Td, MMR, varicella, or hepatitis B vaccine.

** Some high-risk patients need a one-time revaccination with pneumococcal polysaccharide vaccine (PPV).

www.immunize.org/catg.d/p2023b.pdf • Item #P2023 (5/03)

Impact of Vaccines in the 20th Century

Disease	20th Century Annual Morbidity	2002 Total	% Decrease
Smallpox	48,164	0	100
Diphtheria	175,885	1	>99.9
Pertussis	147,271	9,771	93.3
Tetanus	1,314	25	98.1
Polio (paralytic)	16,316	0	100
Measles	503,282	44	>99.9
Mumps	152,209	270	99.8
Rubella	47,745	18	>99.9
Congenital rubella	823	1	99.8
Haemophilus influenzae (<5 yrs)	20,000 (est.)	187 (serotype B or unknown serotype)	99.1

Sources:

1. CDC. Impact of vaccines universally recommended for children – United States, 1900-1998. MMWR 1999;48(12):243-8

2. CDC. Notice to Readers: Final 2002 Reports of Notifiable Diseases. MMWR 2003;52(31):742-50

9/25/03

Reported Cases and Deaths from Vaccine Preventable Diseases, United States, 1950-2002

	Diphtheria		Tetanus		Pertussis		Polio (paralytic)	
Year	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
1950	5,796	410	486	336	120,718	1,118	33,300	1,904
1951	3,983	302	506	394	68,687	951	28,386	1,551
1952	2,960	217	484	360	45,030	402	57,879	3,145
1953	2,355	156	506	337	37,129	270	35,592	1,450
1954	2,041	145	524	332	60,886	373	38,476	1,368
1955	1,984	150	462	265	62,786	467	28,985	1043
1956	1,568	103	468	246	31,732	266	15,140	566
1957	1,211	81	447	279	28,295	183	5,485	221
1958	918	74	445	303	32,148	177	5,787	255
1959	934	72	445	283	40,005	269	8,425	454
1960	918	69	368	231	14,809	118	3,190	230
1960	617	68	379	242	11,468	76	1,312	90
1962	444	41	322	215	17,749	83	910	60
1963	314	45	325	210	17,135	115	449	41
1964	293	42	289	179	13,005	93	122	17
1965	164	18	300	181	6,799	55	72	16
1966	209	20	235	158	7,717	49	113	9
1967	219	32	263	144	9,718	37	41	16
1968	260	30	178	66	4,810	36	53	24
1969	241	25	192	89	3,285	13	20	13
1970	435	30	148	79	4,249	12	33	7
1971	215	13	116	64	3036	18	21	18
1972	152	10	128	58	3,287	6	31	2
1973	228	10	101	40	1,759	5	8	10
1974	272	5	101	44	2,402	14	7	3
1975	307	5	102	45	1,738	8	13	9
1976	128	7	75	32	1,010	7	10	16
1977	84	5	87	24	2,177	10	19	16
1978	76	4	86	32	2,063	6	8	13

	Diphtheria		Tetanus		Pertussis		Polio (paralytic)	
Year	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
1979	59	1	81	30	1,623	6	22	1
1980	3	1	95	28	1,730	11	9	2
1981	5	0	72	31	1,248	6	10	0
1982	2	1	88	22	1,895	4	12	0
1983	5	0	91	22	2,463	5	13	0
1984	1	0	74	20	2,276	7	9	0
1985	3	0	83	23	3,589	4	8	0
1986	0	0	64	22	4,195	6	10	0
1987	3	1	48	16	2,823	1	9	0
1988	2	0	53	17	3,450	4	9	0
1989	3	0	53	9	4,157	12	10	0
1990	4	1	64	11	4,570	12	6	0
1991	5	0	57	11	2,719	0	9	1
1992	4	1	45	9	4,083	5	6	0
1993	0	0	48	11	6,586	1	3	0
1994	2	0	51	9	4,617	8	8	0
1995	0	1	41	5	5,137	6	6	1
1996	2	0	36	1	7,796	4	7	0
1997	4	0	50	4	6,564	6	7	0
1998	1	1	34	7	6,279	5	2	0
1999	1	1	40	7	7,288	7	2	0
2000	1	0	35	5	7,867	12	0	0
2001	2	0	37	5	7,580	17	0	0
2002	1	NA	25	NA	9,771	NA	0	0

	Measles		Mumps		Rubella		CRS
Year	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases
1950	319,124	468	NR		NR		NR
1951	530,118	683	NR		NR		NR
1952	683,077	618	NR		NR		NR
1953	449,146	462	NR		NR		NR
1954	682,720	518	NR		NR		NR
1955	555,156	345	NR		NR		NR
1956	611,936	530	NR		NR		NR
1957	486,799	389	NR		NR		NR
1958	763,094	552	NR		NR		NR
1959	406,162	385	NR		NR		NR
1960	441,703	380	NR	42	NR	12	NR
1961	423,919	434	NR	53	NR	14	NR
1962	481,530	408	NR	43	NR	8	NR
1963	385,156	364	NR	48	NR	16	NR
1964	458,083	421	NR	50	NR	53	NR
1965	261,904	276	NR	31	NR	16	NR
1966	204,136	261	NR	43	46,975	12	NR
1967	62,705	81	NR	37	46,888	16	NR
1968	22,231	24	152,209	25	49,371	24	NR
1969	25,826	41	90,918	22	57,686	29	62
1970	47,351	89	104,953	16	56,552	31	67
1971	75,290	90	124,939	22	45,086	20	44
1972	32,275	24	74,215	16	25,507	14	32
1973	26,690	23	69,612	12	27,804	16	30
1974	22,094	20	59,128	6	11,917	15	22
1975	24,374	20	59,647	8	16,652	21	32
1976	41,126	12	38,492	8	12,491	12	22
1977	57,345	15	21,436	5	20,395	17	29
1978	26,871	11	16,817	3	18,269	10	30
1979	13,597	6	14,255	2	11,795	1	57
1980	13,506	11	8,576	2	3,904	1	14
1981	3,124	2	4,941	1	2,077	5	10

	Measles		Mumps		Rubella		CRS
Year	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases
1982	1,714	2	5,270	2	2,325	4	13
1983	1,497	4	3,355	2	970	3	7
1984	2,587	1	3,021	1	752	1	2
1985	2,822	4	2,982	0	630	1	2
1986	6,282	2	7,790	0	55	1	13
1987	3,655	2	12,848	2	306	0	3
1988	3,396	3	4,866	2	225	1	2
1989	18,193	32	5,712	3	396	4	2
1990	27,786	64	5,292	1	1,125	8	32
1991	9,643	27	4,264	1	1,401	1	34
1992	2,237	4	2,572	0	160	1	11
1993	312	0	1,692	0	192	0	4
1994	963	0	1,537	0	227	0	7
1995	309	2	906	0	128	1	3
1996	508	1	751	1	238	0	2
1997	138	2	683	0	181	0	9
1998	100	0	666	1	364	0	9
1999	100	2	387	1	267	0	6
2000	86	1	338	2	176	0	8
2001	116	1	266	0	23	2	3
2002	44	NA	270	NA	18	NA	1

	Hepatitis A		Hepatitis B		Haemophilus		Varicella	
Year	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
1966	32,859	NA	1,497	NA	NR	NR	NR	
1967	38,909	NA	2,458	NA	NR	NR	NR	
1968	45,893	NA	4,829	NA	NR	NR	NR	
1969	48,416	NA	5,909	NA	NR	NR	NR	
1970	56,797	NA	8,310	NA	NR	NR	NR	
1971	59,606	NA	9,556	NA	NR	NR	NR	
1972	54,074	NA	9,402	NA	NR	NR	164,114	122
1973	50,749	NA	8,451	NA	NR	NR	182,927	138
1974	40,358	NA	10,631	NA	NR	NR	141,495	106
1975	35,855	NA	13,121	NA	NR	NR	154,248	83
1976	33,288	NA	14,973	NA	NR	NR	183,990	106
1977	31,153	NA	16,831	NA	NR	NR	188,396	89
1978	29,500	NA	15,016	NA	NR	NR	154,089	91
1979	30,407	129	15,452	260	NR	NR	199,081	103
1980	29,087	112	19,015	294	NR	NR	190,894	78
1981	25,802	93	21,152	394	NR	NR	200,766	84
1982	23,403	83	22,177	375	NR	NR	167,423	61
1983	21,532	82	24,318	438	NR	NR	177,462	57
1984	22,040	77	26,115	465	NR	NR	221,983	53
1985	23,210	80	26,611	490	NR	NR	178,162	68
1986	23,430	65	26,107	557	NR	NR	183,243	47
1987	25,280	77	25,916	595	NR	NR	213,196	89
1988	28,507	70	23,177	621	NR	NR	192,857	83
1989	35,821	88	23,419	711	NR	NR	185,441	89
1990	31,441	76	21,102	816	NR	NR	173,099	120
1991	24,378	71	18,003	912	2,764	17	147,076	81
1992	23,112	82	16,126	903	1,412	16	158,364	100
1993	24,238	95	13,361	1041	1,419	7	134,722	100
1994	26,796	97	12,517	1120	1,174	5	151,219	124
1995	31,582	142	10,805	1027	1,180	12	120,624	115
1996	31,032	121	10,637	1082	1,170	7	83,511	81

	Hepatitis A		Hepatitis B		Haemophilus		Varicella	
Year	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
1997	30,021	127	10,416	1,030	1,162	7	98,727	99
1998	23,229	114	10,258	1,052	1,194	11	82,455	81
1999	17,047	134	7,694	832	1,309	6	46,016	48
2000	13,397	106	8,036	886	1,398	6	27,382	44
2001	10,609	NA	7,843	NA	1,597	NA	22,536	NA
2002	8,795	NA	8,064	NA	1,743	NA	22,841	NA

Notes

NA - Not Available
NR - Not nationally reportable
CRS: Congenital Rubella Syndrome

Prior to 1966, hepatitis A and B were not separated from other types of hepatitis. Prior to 1978, deaths from hepatitis A and B were not separated from deaths from other types of hepatitis.

Haemophilus (Hi) reporting includes all serotypes and all ages. In 2002, 34 cases of invasive Hi type B disease were reported among children <5 years of age.

Varicella was removed from the nationally notifiable disease list in 1991. In 2002, varicella cases were reported from 19 states and the District of Columbia.

Sources:
Final totals for 2002: *MMWR* 2003;52(31):742-50.

Reportable diseases (1970-2001): Summary of Notifiable Diseases, United States, 2000. *MMWR* 2002;50(53):90-7.

Reportable disease (1950-1970): Earlier editions of Summary of Notifiable Diseases, published annually in *MMWR*.

Deaths: National Center for Health Statistics Mortality Report for respective years.

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Vaccine Coverage Levels - United States, 1962-2000

Year	DTP3+	DTP4+	Polio3+	MCV	Hib3+	HebB3+	Combined 4-3-1	Combined 4-3-1-3
1962	67.3							
1963	71.4							
1964	74.6							
1965	72.7							
1966	74.0							
1967	77.9			60.0				
1968	76.8			61.5				
1969	77.4			61.4				
1970	76.4			58.4				
1971	77.8			62.2				
1972	74.1			62.8				
1973	71.7		59.5	61.0				
1974	72.4		60.0	63.4				
1975	73.2		63.6	65.5				
1976	72.7		61.3	66.3				
1977	69.6		62.6	65.0				
1978	66.6		59.5	63.6				
1979	64.4		59.7	66.5				
1980	66.0		58.9	66.6				
1981	68.1		59.2	66.8				
1982	67.1		57.0	67.6				
1983	65.4		56.9	66.3				
1984	65.0		53.2	65.8				
1985	63.6		53.6	61.2				
1986								
1987								
1988								
1989								
1990								
1991	68.8		53.2	82.0			55.0	
1992	83.0	59.0	72.4	82.5	28.2	8.0	68.7	55.3

Year	DTP3+	DTP4+	Polio3+	MCV	Hib3+	Var	HebB3+	Combined 4-3-1	Combined 4-3-1-3
1993	88.2	72.1	78.9	84.1	55.0		16.3	67.1	
1994	93.0	77.7	83.0	89.0	86.0		37.0	75.0	
1995	94.7	78.5	87.9	87.6	91.7		68.0	76.2	74.2
1996	95.0	81.1	91.1	90.7	91.7	16.0	81.8	78.4	76.5
1997	95.5	81.5	90.8	90.5	92.7	25.9	83.7	77.9	76.2
1998	95.6	83.9	90.8	92.0	93.4	43.2	87.0	80.6	79.2
1999	95.9	83.3	89.6	91.5	93.5	57.5	88.1	79.9	78.4
2000	94.1	81.7	89.5	90.5	93.4	67.8	90.3	77.6	76.2

Notes
MCV: measles-containing vaccine
Var: varicella vaccine

Data prior to 1993 were collected by the National Health Interview Survey and represent 2-year-old children. Data from 1993 are from the National Immunization Survey and represent 19-35 month-old children. Different methods were used for the two surveys. No national coverage data were collected in 1986-1990.

Combined 4-3-1: Four or more doses of DTP/DTaP/DT, three or more doses of poliovirus vaccine, and one or more doses of any measles-containing vaccine.

Combined 4-3-1-3: Four or more doses of DTP/DTaP/DT, three or more doses of poliovirus vaccine, one or more doses of any measles-containing vaccine, and three or more doses of *Haemophilus influenzae* type b vaccine.

Most current publication: CDC. National, state, and urban area vaccination coverage levels among children aged 19-35 months - United States, 2000. *MMWR* 2001;50:637-41.

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VACCINE EXCIPIENT & MEDIA SUMMARY

This section begins with a summary of the excipients included in licensed vaccines in the United States, as of February 2001.

Following the list of excipients is a list of culture media used in the manufacturing process of vaccines licensed in the United States.

All reasonable efforts have been made to assure the accuracy of this information, but manufacturers may change product contents before that information is reflected here.

Excipients Included In U.S. Licensed Vaccines[1]

Excipient	Use	Vaccine
Aluminum hydroxide	Adjuvant	Anthrax (*BioThrax*), DTaP (*Certiva, Infanrix, Acel-Imune*), DT (Massachusetts), Td (Massachusetts), Hib (*PedvaxHib*), Hib-Hepatitis B (*Comvax*), Hepatitis A (*Havrix, Vaqta*), Hepatitis B (*Engerix-B, Recombivax-HB*), Lyme disease (*LymeRix*)
Aluminum Phosphate	Adjuvant	DTaP (*Acel-Imune*), DTwP (Massachusetts, BioPort), DT (Wyeth-Lederle), Td (Massachusetts, Wyeth-Lederle), Pneumococcal (*Prevnar*), Rabies (*BioRab*)
Aluminum potassium sulfate	Adjuvant	DTaP (*Tripedia*), DTwP (Aventis Pasteur), DT (Aventis Pasteur), Td (Aventis Pasteur)
Amino acids	Growth medium	Hepatitis A (*Havrix*), Typhoid oral (*Vivotif*)
Ammonium sulfate	Protein fractionation	Hib (*Act-HIB*)
Amphotericin B	Anti-bacterial	Rabies (RabAvert)
Ascorbic acid	Antioxidant	Typhoid oral (*Vivotif*)
Bactopeptone	Growth medium	Influenza (varies seasonally)
Beta-propiolactone	Viral inactivator	Influenza (*Fluvirin*), Rabies (Imovax, RabAvert)
Benzethonium chloride	Preservative	Anthrax (*BioThrax*)
Bovine albumin or serum	Growth medium, protein stabilizer	Hepatitis A (*Havrix, Vaqta*), Poliovirus attenuated (*Orimune*), Rabies (*Imovax, RabAvert*), Vaccinia (*DryVax*), Varicella (*Varivax*)
Brilliant green	Dye	Vaccinia (*DryVax*)
Chlortetracycline	Anti-bacterial	Rabies (*RabAvert*), Vaccinia (*DryVax*)
DNA	Manufacturing residue	Hepatitis A (*Vaqta*)
Ethylenediamine-tetraacetic acid sodium (EDTA)	Preservative	Rabies (*RabAvert*), Varicella (*Varivax*)
Egg protein	Growth medium	Influenza (all brands), Yellow fever (*YF-Vax*)
Fetuin (a bovine serum protein)	Affinity ligand for chromatography	DTaP (*Certiva*)

Vaccine Excipient & Media Summary

Excipients Included In U.S. Licensed Vaccines[1]		
Excipient	**Use**	**Vaccine**
Formaldehyde, formalin	Anti-microbial, preservative	Anthrax (*BioThrax*), DTaP (all brands), DTwP (all brands), DTwP-Hib (*Tetramune*), DT (all brands), Td (all brands), Hepatitis A (*Havrix, Vaqta*), Hib (*ActHIB*), Influenza (*Fluogen, FluShield, Fluzone*), Japanese encephalitis (*JE-Vax*), Poliovirus inactivated (*Ipol*)
Gelatin	Stabilizer in freeze-drying, solvent	DTaP (*Acel-Imune, Tripedia*), Influenza (*Fluzone*), Japanese encephalitis (*JE-Vax*), Measles (*Attenuvax*), Mumps (*Mumpsvax*), Rubella (*Meruvax II*), MMR (*MMR-II*), Rabies (*RabAvert*), Typhoid oral (*Vivotif*), Varicella (*Varivax*), Yellow fever (*YF-Vax*)
Gentamicin	Anti-bacterial	Influenza (*FluShield*)
Glycerin	Solvent	Vaccinia (*DryVax*)
Glycine	Protein stabilizer	DTaP (*Acel-Imune*), DTwP-Hib (*Tetramune*), DT (most brands), Td (most brands)
Human serum albumin	Growth medium	Rabies (*Imovax*)
Hydrochloric acid	Adjust pH	DTaP (most brands), DT (most brands)
Hydrogen peroxide	Toxin detoxifier	DTaP (*Certiva*)
Kanamycin	Anti-bacterial	Lyme disease (*LymeRix*)
Lactose	Stabilizer in freeze-drying, filling	BCG (*Tice*), Hib (some packages), Meningococcal (*Menomune*), Typhoid oral (*Vivotif*)
Magnesium stearate	Lubricant for capsule filling	Typhoid oral (*Vivotif*)
Monosodium glutamate	Stabilizer	Varicella (*Varivax*)
Mouse serum protein	Growth medium	Japanese encephalitis (*JE-Vax*)
MRC-5 cellular protein	Growth medium	Hepatitis A (*Havrix, Vaqta*), Rabies (*Imovax, RabAvert*), Varicella (*Varivax*)
Neomycin	Anti-bacterial	Influenza (*Fluvirin*), Measles (*Attenuvax*), Mumps (*Mumpsvax*), Rubella (*Meruvax II*), MMR (*MMR-II*), Poliovirus attenuated (*Orimune*), Poliovirus inactivated (*Ipol*), Rabies (*Imovax, RabAvert*), Vaccinia (*DryVax*), Varicella (*Varivax*)
Ovalbumin	Growth medium	Rabies (*RabAvert*)
Phenol	Preservative, anti-bacterial	Pneumococcal (*Pneumovax-23*), Typhoid inactivated (*Typhim Vi*), Vaccinia (*DryVax*)
Phenol red (phenolsulfonphthalein)	pH indicator, dye	Poliovirus attenuated (*Orimune*), Rabies (*Imovax*)
2-Phenoxyethanol	Preservative	DTaP (*Infanrix*), Hepatitis A (*Havrix*), Lyme disease (*LymeRix*), Poliovirus inactivated *(Ipol)*

Vaccine Excipient & Media Summary

Excipients Included In U.S. Licensed Vaccines[1]		
Excipient	**Use**	**Vaccine**
Phosphate buffers (eg, disodium, monosodium, potassium, sodium dihydrogen phosphate)	Adjust pH	DTaP (all brands), DT (most brands), Hib (*Act-Hib*), Hepatitis A (*Havrix*), Hepatitis B (*Engerix-B*), Lyme disease (*LymeRix*), Poliovirus inactivated (*Ipol*), Rabies (*BioRab*), Typhoid inactivated (*Typhim Vi*), Varicella (*Varivax*)
Polydimethylsilozone	Anti-foaming agent	Typhoid inactivated (*Typhim Vi*)
Polyethylene glycol p-isooctylphenyl ether (Triton X-100)	Nonionic surfactant (viral inactivation)	Influenza (*Fluzone*)
Polymyxin B	Anti-bacterial	Influenza (*Fluvirin*), Poliovirus inactivated (*Ipol*), Vaccinia (*DryVax*)
Polyoxyethylene 9-10 nonyl phenol (Triton N-101, octoxynol 9)	Nonionic surfactant (viral inactivation)	Influenza (*Fluvirin*)
Polysorbate 20	Surfactant	Hepatitis A (*Havrix*)
Polysorbate 80	Surfactant	DTaP (*Acel-Imune, Infanrix, Tripedia*), Influenza (*Fluogen*)
Potassium glutamate	Stabilizer	Rabies (*RabAvert*)
Silicon	Anti-foaming agent	Lyme disease (*LymeRix*)
Sodium acetate	Adjust pH	DT (some brands), Td (some brands)
Sodium bisulfite	Preservative	Influenza (*Fluogen*)
Sodium borate	Adjust pH	Hepatitis A (*Vaqta*), Hib-Hepatitis B (*Comvax*)
Sodium chloride	Adjust tonicity	Most vaccines, including Anthrax, BCG, Cholera, DTaP, DTwP, DTwP-Hib, DT, Td, Hepatitis A, Hepatitis B, Hib, Influenza, Lyme disease, Pneumococcal, Polio inactivated, Rabies, Typhoid inactivated, Varicella, Yellow fever
Sodium hydroxide	Adjust pH	DT (most brands), Td (most brands)
Sorbitol	Stabilizer, solvent	Measles (*Attenuvax*), Mumps (*Mumpsvax*), Rubella (*Meruvax II*), MMR (*MMR-II*), Polio attenuated, Yellow fever (*YF-Vax*)
Streptomycin	Anti-bacterial	Influenza (*Fluogen*), Poliovirus attenuated (*Orimune*), Poliovirus inactivated (*Ipol*), Vaccinia (*DryVax* [dihydrostreptomycin])
Sucrose	Stabilizer in freeze-drying	Hib (*Act-HIB*), Typhoid oral (*Vivotif*), Varicella (*Varivax*)
Thimerosal	Preservative in some multidose containers (see package labeling for precise content)	DTaP (some containers), DTwP (most containers), DT (most brands), Td (most brands), Hepatitis B (some packages), Hib (some packages), Influenza (all brands), Japanese encephalitis (*JE-Vax*), Meningococcal (Menomune), Pneumococcal (*Pnu-Imune 23*), Rabies (*BioRab*)
Tri(n)butylphosphate	Viral inactivator	Influenza (*FluShield*)

Vaccine Excipient & Media Summary

Excipients Included In U.S. Licensed Vaccines[1]		
Excipient	**Use**	**Vaccine**
Vitamins unspecified	Growth medium	Rabies (*Imovax*)
Yeast protein	Growth medium	Hepatitis B (*Engerix-B, Recombivax-HB*), Hib (*HibTiter*), Hib-Hepatitis B (*Comvax*)

[1] Proprietary names appear in itallics.

References: Grabenstein JD. Immunologic necessities: Diluents, adjuvants, and excipients. *Hosp Pharm* 1996;31:1387-92,1397-1401.

Grabenstein JD. Clinical management of hypersensitivities to vaccine components. *Hosp Pharm* 1997;32:77-84,87.

Vaccine Excipient & Media Summary

Vaccine-Production Media[1]	
Vaccine Culture Media	Vaccine(s)
Bovine protein	Pneumococcal (*Pneumovax-23, Pnu-Imune 23*), Poliovirus attenuated (*Orimune*), Typhoid oral (*Vivotif*)
Calf skin	Vaccinia (*DryVax*)
Chick embryo fibroblast tissue culture	Measles (*Attenuvax*), Mumps (*Mumpsvax*), combination vaccines containing them, Rabies (*RabAvert*)
Chicken embryo (fertilized egg)	Influenza (all brands), Yellow fever (*YF-Vax*)
Cohen-Wheeler, modified (pertussis components)	DTaP (alternate is Stainer-Scholte media), DTwP (most brands, alternate is Bordet-Gengou media)
Escherichia coli	Lyme disease (*LymeRix*)
Human diploid tissue culture, MRC-5	Hepatitis A (*Havrix, Vaqta*), Poliovirus inactivated (*Poliovax*), Rabies (Imovax), Varicella (*Varivax*)
Human diploid tissue culture, WI-38	Rubella (*Meruvax II*), combination vaccines containing it, Varicella (*Varivax*)
Lathman	DTaP (*Infanrix*, tetanus component)
Linggoud-Fenton	DTaP (*Infanrix*, diphtheria component)
Monkey kidney tissue culture, Cercopithecus	Poliovirus attenuated (*Orimune*)
Monkey kidney tissue culture, Vero (Vervet or African green monkeys)	Poliovirus inactivated (*Ipol*)
Mouse brain	Japanese encephalitis (*JE-Vax*)
Mueller-Miller media	Diphtheria and tetanus vaccines (most brands)
Rhesus fetal lung tissue culture	Rabies (*BioRab*)
Stainer-Scholte	DTaP (*Infanrix*, pertussis component)
Soy peptone broth	Pneumococcal (*Prevnar*)
Synthetic/semi-synthetic	Anthrax (*BioThrax*), BCG (*Tice*), DT (all brands), Td (all brands), Hib (all brands), Meningococcal (*Menomune*), Pneumococcal (*Pneumovax-23, Pnu-Imune 23*), Typhoid inactivated (*Typhim Vi*)
Yeast or yeast extract	Hepatitis B *(Engerix-B, Recombivax-HB)*, Hib *(HibTiter)*, Hib-Hepatitis B *(Comvax)*, Lyme disease (*LymeRix*)

[1] Proprietary names appear in italics.

Vaccine Excipient & Media Summary Part 2

Excipients Included in U.S. Vaccines, by Vaccine

Vaccine	Contains
Anthrax (BioThrax)	Aluminum hydroxide, Benzethonium chloride, Formaldehyde or formalin, Sodium chloride
BCG (Tice)	Lactose, Sodium chloride
DTaP (DAPTACEL)	Aluminum phosphate, Formaldehyde or formalin, Sodium chloride, 2-phenoxyethanol
DTaP (Infanrix)	Formaldehyde or formalin, 2-phenoxyethanol, Phosphate buffers (e.g., disodium, monosodium, potassium, sodium dihydrogen phosphate), Polysorbate 80, Sodium chloride
DTaP (Tripedia)	Aluminum potassium sulfate, Formaldehyde or formalin, Gelatin, Phosphate buffers (e.g., disodium, monosodium, potassium, sodium dihydrogen phosphate), Polysorbate 80, Sodium chloride, Thimerosal*
DTaP (Most brands)	Hydrochloric acid
DTaP/Hib (TriHIBit)	Aluminum potassium sulfate, Formaldehyde or formalin, Gelatin, Phosphate buffers (e.g., disodium, monosodium, potassium, sodium dihydrogen phosphate), Polysorbate 80, Sodium chloride, Thimerosal*, Ammonium sulfate, Sucrose
DTaP/HepB/IPV (Pediarix)	2-phenoxyethanol, Sodium chloride, Aluminum, Formaldehyde, Polysorbate 80, Thimerosal*, Neomycin, Polymyxin B, Yeast protein
DT (Aventis)	Aluminum potassium sulfate, Formaldehyde or formalin, Sodium chloride, Thimerosal
DT (Massachusetts)	Aluminum hydroxide, Formaldehyde or formalin, Sodium chloride, Thimerosal
DT (Some brands)	Glycine, Hydrochloric acid, Phosphate buffers (e.g., disodium, monosodium, potassium, sodium dihydrogen phosphate), Sodium acetate, Sodium hydroxide
Hib (ACTHib)	Ammonium sulfate, Formaldehyde or formalin, Phosphate buffers (e.g., disodium, monosodium, potassium, sodium dihydrogen phosphate), Sodium chloride, Sucrose
Hib (PedvaxHib)	Aluminum hydroxide, Sodium chloride
Hib (HibTITER)	Yeast protein, Thimerosal (multi-dose)
Hib (Some packages)	Lactose
Hib/HepB (COMVAX)	Aluminum hydroxide, Sodium borate, Sodium chloride, Yeast protein
Hep A (Havrix)	Aluminum hydroxide, Amino acids, Bovine albumin or serum, Formaldehyde or formalin, MRC-5 cellular protein, 2-phenoxyethanol, Phosphate buffers (e.g., disodium, monosodium, potassium, sodium dihydrogen phosphate), Polysorbate 20, Sodium chloride

Vaccine	Contains
Hep A (Vaqta)	Aluminum hydroxide, Bovine albumin or serum, DNA, Formaldehyde or formalin, MRC-5 cellular protein, Sodium borate, Sodium chloride
Hep B (Engerix-B)	Aluminum hydroxide, Phosphate buffers (e.g., disodium, monosodium, potassium, sodium dihydrogen phosphate) , Sodium chloride, Yeast protein, Thimerosal*
Hep B (Recombivax)	Aluminum hydroxide, Sodium chloride, Yeast protein
HepA/HepB (Twinrix)	Phosphate-buffer sodium chloride, Alunimum phosphate, Aluminum hydroxide, 2-phenoxyethanol, Amino acids, Polysorbate 20, Formalin, Thimerosal*, Yeast protein, Neomycin sulfate
Influenza (Fluvirin)	Beta-propiolactone, Egg protein, Neomycin, Polymyxin B, Polyoxyethylene 9-10 nonyl phenol (Triton N-101, octoxynol 9), Sodium chloride, Thimerosal
Influenza (Fluzone)	Egg protein, Formaldehyde or formalin, Gelatin, Polyethylene glycol p-isooctylphenyl ether (Triton X-100), Sodium chloride, Thimerosal
Influenza (FluMist)	Egg protein, Gentamicin, Monosodium glutamate, Sucrose, Potassium phosphate
Influenza (varies)	Bactopeptone
IPV (Ipol)	Formaldehyde or formalin, Neomycin, 2-phenoxyethanol, Phosphate buffers (e.g., disodium, monosodium, potassium, sodium dihydrogen phosphate) , Polymyxin B, Sodium chloride, Streptomycin
Japanese Encephalitis (JE-Vax)	Formaldehyde or formalin, Gelatin, Mouse serum protein
Measles (Attenuvax)	Gelatin, Neomycin, Sorbitol
Meningococcal (Menomune)	Lactose, Thimerosal*
Mumps (Mumpsvax)	Gelatin, Neomycin, Sorbitol
MMR (MMR-II)	Gelatin, Neomycin, Sorbitol
Pneumococcal (Pneumovax)	Phenol, Sodium chloride
Pneumococcal (Prevnar)	Aluminum phosphate, Sodium chloride
Rabies (Biorab)	Aluminum phosphate, Phosphate buffers (e.g., disodium, monosodium, potassium, sodium dihydrogen phosphate), Thimerosal
Rabies (Imovax)	Beta-propiolactone, Bovine albumin or serum, Human serum albumin, MRC-5 cellular protein, Neomycin, Phenol red (phenolsulfonphthalein), Sodium chloride, Vitamins (unspecified)
Rabies (RabAvert)	Amphotericin B, Beta-propiolactone, Bovine albumin or serum, Chlortetracycline, Ethylenediamine-tetraacetic acid sodium (EDTA), Gelatin, MRC-5 cellular protein, Neomycin, Ovalbumin, Potassium glutamate, Sodium chloride

Vaccine	Contains
Rubella (Meruvax II)	Gelatin, Neomycin, Sorbitol
Td (Aventis)	Aluminum potassium sulfate, Formaldehyde or formalin, Sodium chloride, Thimerosal, (may contain Glycine, Sodium acetate, Sodium hydroxide)
Td (Massachusetts)	Aluminum hydroxide, Aluminum Phosphate, Formaldehyde or formalin, Sodium chloride, Thimerosal, (may contain Glycine, Sodium acetate, Sodium hydroxide)
Typhoid (inactivated – Typhim Vi)	Phenol, Phosphate buffers (e.g., disodium, monosodium, potassium, sodium dihydrogen phosphate), Polydimethylsilozone, Sodium chloride
Typhoid (oral – TY21a)	Amino acids, Ascorbic acid, Gelatin, Lactose, Magnesium stearate, Sucrose
Vaccinia (DryVax)	Bovine albumin or serum, Brilliant green, Chlortetracycline, Glycerin, Neomycin, Phenol, Polymyxin B, Streptomycin
Varicella (Varivax)	Bovine albumin or serum, Ethylenediamine-tetraacetic acid sodium (EDTA), Gelatin, Monosodium glutamate, MRC-5 cellular protein, Neomycin, Phosphate buffers (e.g., disodium, monosodium, potassium, sodium dihydrogen phosphate), Sodium chloride, Sucrose
Yellow Fever (YF-Vax)	Egg protein, Gelatin, Sodium chloride, Sorbitol

*Where "thimerosal" is marked with an asterisk (*) it indicates that the product should be considered equivalent to thimerosal-free products. This vaccine may contain trace amounts (<3 mcg) of mercury left after post-production thimerosal removal, but these amounts have no biological effect.
JAMA 1999;282(18) and *JAMA* 2000;283(16).

Adapted primarily from Grabenstein JD. Immunofacts: Vaccines & Immunologic Drugs. St. Louis: Facts and Comparisons, August 2002.

Essential Public Health Services

"*The individuals who work in public health have entered the field from many professional disciplines–medicine, nursing, law, dentistry, teaching, social work, and even the ministry. When there's a straightforward task to be done–inspecting restaurants, handing out a WIC voucher, or checking vital signs–it's easy for everyone to see the purpose of public health and understand it. It's much harder for staff to understand the "why" of public health–why we give immunizations, why community assessments are important and how all the work of public health is interconnected.*" – Local health department director

The U.S. public health workforce consists of approximately 500,000 individuals currently employed by a range of organizations involved in public health practice including governmental public health agencies, other public sector agencies, health care delivery organizations, voluntary organizations, community-based groups, academia and other entities. The public health workforce is defined less by where they work than by what they do which is to provide essential public health services to communities throughout the nation. The essential services were listed in a statement *Public Health in America* in 1994.

The Public Health Functions Steering Committee, comprised of representatives of several national organizations and federal agencies involved in public health developed *Public Health in America* as a consensus statement "to explain what public health is; clarify the essential role of public health in the overall health system; and provide accountability by linking public health performance to health outcomes." The statement provides a common vision for public health, "Healthy People in Healthy Communities," as well as a mission, "To promote physical and mental health and prevent disease, injury and disability." The **Essential Public Health Services** provides a list of ten public health services which define the practice of public health. (Table 1)

Since 1994, there is momentum around using the Essential Services framework. It has already been proven to be valuable in assessing organizational capacity, job performances and expenditures. There is more work needed to increase the usefulness of this framework. One promising area is the use of the essential services to identify the general knowledge, skills and abilities (i.e., core competencies) that are needed by public health workers regardless of where they work or their specific role, background or programmatic responsibility. Examples of core competencies include epidemiology, health communications/social marketing, community needs assessment and mobilization.

Table 1. Ten Essential Public Health Services

1. **Monitor health** status to identify community health problems.
2. **Diagnose and investigate** health problems and health hazards in the community.
3. **Inform, educate, and empower** people about health issues.
4. **Mobilize community partnerships** to identify and solve health problems.
5. **Develop policies** and plans that support individual and community health efforts.
6. **Enforce laws** and regulations that protect health and ensure safety.
7. **Link** people **to** needed personal health **services and** assure the provision of health **care** when otherwise unavailable.
8. **Assure** a **competent** public health and personal health **workforce**.
9. **Evaluate** effectiveness, accessibility, and quality of personal and population-based health services.
10. **Research** for new insights and innovative solutions to health problems.

Public Health Functions Steering Committee, Public Health in America, July 1995.

As one state health director explained: "*Historically, we've generally done a good job of tasks like screening children or treating STDs and TB. We haven't done as well with some other tasks critical to improving the public's health, because our people lack the skills to convene and talk to community groups, analyze and explain data, sit at a policy table, or assess community needs*." It's been estimated that almost 4 out of 5 public health workers nationwide are under trained in the disciplines of public health. A major challenge in the 21st century will be to ensure that all public health workers have access to the training and continuing education needed to perform the essential services. Your participation in the "Epidemiology and Prevention of Vaccine Preventable Diseases" contributes directly to competent delivery of the essential services of public health. As part of the public health team your role is broad and more complicated than just providing personal health services, you are part of helping the community create conditions in which everyone can be healthy.

For additional information: http://web.health.gov/phfunctions/

APPENDIX B

Strategies to Improve Immunization Levels

Standards for Child and Adolescent Immunization Practices

Copies may be requested from:

Centers for Disease Control and Prevention
National Immunization Program
Resource Center
1600 Clifton Road
Mailstop E-34
Atlanta, GA 30333-0418

Online ordering is available through:
www.cdc.gov/nip/publications

Introduction

In 1992, the National Vaccine Advisory Committee (NVAC), in collaboration with the Ad Hoc Working Group for the Development of Standards for Pediatric Immunization Practices, a working group representing public and private agencies with input from state and local health departments, physician and nursing organizations, and public and private providers, developed a set of standards as to what constitutes the most essential and desirable immunization policies and practices. These standards were endorsed by a variety of medical and public health organizations and represented an important element in our national strategy to protect America's children against vaccine-preventable diseases.

Since that time, vaccine delivery in the US has changed in several important ways. First, vaccination coverage rates among preschool children have increased substantially and are now monitored by the National Immunization Survey.[1 2] Second, vaccination of children has shifted markedly from the public to the private sector,[3 4 5] with an emphasis on vaccination in the context of primary care and the Medical Home.[6]

The Vaccines for Children Program has provided critical support to this shift by covering the cost of vaccinations for the most economically disadvantaged children and adolescents. Third, the development and introduction of performance measures, such as the National Committee for Quality Assurance's HEDIS (Health Plan Employer Data and Information Set),[7] have focused national attention upon the quality of preventive care, including vaccination. Finally, high quality research in health services has helped to refine strategies for raising and sustaining vaccination coverage levels among children, adolescents, and adults.[8]

Health care professionals who vaccinate children and adolescents continue to face important challenges. These challenges include a diminishing level of experience-among patients, parents and physicians-with the diseases that vaccines prevent, the ready availability of vaccine-related information that may be inaccurate or misleading, the increasing complexity of the vaccination schedule, and the failure of many health plans to pay for the costs associated with vaccination. In addition, recommendations from the Advisory Committee on Immunization Practices (ACIP),the American Academy of Pediatrics (AAP), the American Academy of Family Physicians (AAFP) and the American Medical Association (AMA) in 1996 underscore the need to focus on adolescent vaccination.[9]

In this context, NVAC, along with partners representing federal agencies, state and local health departments, and professional organizations, revised and updated the Standards during 2001-02 to reflect these changes and challenges in vaccine delivery. The revision was approved by NVAC on February 8, 2002 and distributed widely among a variety of medical and public health organizations for review and endorsement. More than 40 organizations have formally endorsed the Standards for Child and Adolescent Immunization Practices.

The Standards are directed toward "health care professionals," an inclusive term for the many persons in clinical settings who share in the responsibility for vaccination of children and adolescents: physicians, nurses, mid-level practitioners (e.g., nurse practitioners, physician assistants), medical assistants, and clerical staff. In addition to this primary audience, the Standards are intended to be useful to public health professionals, policy makers, health plan administrators, employers who purchase health care coverage, and others whose efforts shape and support the delivery of vaccination services.

Of note, the use of the term "standards" should not be confused with a minimum standard of care. Rather, these Standards represent the most desirable immunization practices, which health care professionals should strive to achieve. Given current resource limitations, some health care professionals may find it difficult to implement all of the Standards, because of circumstances over which they have little control. The expectation is that, by summarizing best immunization practices in a clear and concise format, the Standards will assist these providers in securing the resources necessary to implement this set of recommendations.

By adopting these Standards, health care professionals can enhance their own policies and practices, making achievement of vaccination objectives for children and adolescents as outlined in Healthy People 2010, a nationwide health promotion and disease prevention agenda from the U.S. Department of Health and Human Services,[10] both feasible and likely. Achieving these objectives will improve the health and welfare of all children and adolescents as well as the communities in which they live.

Standards for Child and Adolescent Immunization Practices

Availability of vaccines

1. Vaccination services are readily available.
2. Vaccinations are coordinated with other health care services and provided in a Medical Home[6] when possible.
3. Barriers to vaccination are identified and minimized.
4. Patient costs are minimized.

Assessment of vaccination status

5. Health care professionals review the vaccination and health status of patients at every encounter to determine which vaccines are indicated.
6. Health care professionals assess for and follow only medically accepted contraindications.

Effective communication about vaccine benefits and risks

7. Parents/guardians and patients are educated about the benefits and risks of vaccination in a culturally appropriate manner and in easy-to-understand language.

Proper storage and administration of vaccines and documentation of vaccinations

8. Health care professionals follow appropriate procedures for vaccine storage and handling.
9. Up-to-date, written vaccination protocols are accessible at all locations where vaccines are administered.
10. Persons who administer vaccines and staff who manage or support vaccine administration are knowledgeable and receive on-going education.
11. Health care professionals simultaneously administer as many indicated vaccine doses as possible.
12. Vaccination records for patients are accurate, complete, and easily accessible.
13. Health care professionals report adverse events following vaccination promptly and accurately to the Vaccine Adverse Event Reporting System (VAERS) and are aware of a separate program, the National Vaccine Injury Compensation Program (VICP).
14. All personnel who have contact with patients are appropriately vaccinated.

Implementation of strategies to improve vaccination coverage

15. Systems are used to remind parents/guardians, patients, and health care professionals when vaccinations are due and to recall those who are overdue.
16. Office- or clinic-based patient record reviews and vaccination coverage assessments are performed annually.
17. Health care professionals practice community-based approaches.

The Standards

Availability of vaccines

1. Vaccination services are readily available.

All health care professionals who provide primary care to children and adolescents should always include routinely recommended vaccines as a part of the care they deliver in the Medical Home.[6]

For some children and adolescents, the main contact with the health care system is not in a primary care provider's office, and therefore, opportunities for vaccination may be missed. Thus, specialists and health care professionals in settings such as schools and school health clinics, sports physical clinics, family planning clinics, sexually transmitted disease (STD) clinics, and substance abuse treatment centers, should assess each patient's vaccination status and either offer indicated vaccines or refer for vaccination if necessary.

Information on vaccines administered outside the primary care setting should be communicated to the primary care provider.

2. Vaccinations are coordinated with other health care services and provided in a Medical Home[6] when possible.

Ideally, vaccines should be given as part of comprehensive health care. In primary care settings, vaccination services should be coordinated with routine well-care visits and other visits. Patients vaccinated in other settings should be encouraged to receive subsequent vaccines in their primary care setting. Patients without a primary care provider should be assisted with identifying one.

3. Barriers to vaccination are identified and minimized.

Barriers to receiving vaccines include delays in scheduling appointments, requiring a well-care visit, long waiting periods in the office, and lack of culturally and age-appropriate educational materials. A physical exam, while an important part of well care, should not be required before administering vaccines: simply observing the patient and questioning about the patient's health status, immunization history, and vaccine contraindications are sufficient. In addition, vaccination-only visits should be available.

Health care professionals should seek advice from parents/guardians and patients to identify ways to make vaccination services easier to use.

4. Patient costs are minimized.

Out-of-pocket costs-including vaccine, administration, and office visit fees-should be as low as possible for all patients, and no child or adolescent should be denied vaccination because of inability to pay.

Resources should be identified to keep patient vaccination costs as low as possible. Free vaccine is available through some public programs, although health care professionals offering these vaccines may charge a reasonable administration fee. Sources of publicly funded vaccines include the Vaccines for Children (VFC) Program, Public Health Service Section 317 grants to States, and state or local programs. Children and adolescents should be screened for their eligibility to receive vaccines through these programs. Vaccinations provided through VFC or Section 317 grants may not be denied because of an inability to pay the administration fee, and health care professionals should assure that parents/guardians and patients are aware of this requirement (applies to all vaccines purchased using Centers for Disease Control and Prevention contracts, regardless of the setting-private or public-in which the vaccines are administered).

To minimize costs for patients, health plans and insurance plans should include the provision and administration of all routinely recommended vaccines as a covered benefit for all children and adolescents. Furthermore, to minimize costs for health care professionals, purchasers and health plans should reimburse health care professionals adequately for delivering vaccines, including the time required for vaccine administration and for communication about vaccine benefits and risks.

** Further information*
CDC maintains a web page about VFC on the Internet at: www.cdc.gov/nip/vfc

Assessment of vaccination status

5. Health care professionals review the vaccination and health status of patients at every encounter to determine which vaccines are indicated.

Health care professionals should review the vaccination status of all patients at all health care visits to minimize the number of missed opportunities to vaccinate. This review should determine if the patient has received any vaccinations elsewhere or is at high risk for disease or undervaccination. This information should be documented in the patient's chart and preventive health summary. Health care professionals who do not offer vaccinations should refer patients to a primary care provider for needed vaccinations.

6. Health care professionals assess for and follow only medically accepted contraindications.

Withholding vaccinations due to medical concerns that are not contraindications results in missed opportunities for prevention. Health care professionals should ask about any condition or circumstance that might indicate a vaccination should be withheld or delayed and about prior adverse events temporally associated with any vaccination.

Health care professionals should support their decisions about what constitutes a contraindication or deferral for each vaccine by consulting the Guide to Contraindications to Vaccinations published by CDC (available on the Internet at: www.cdc.gov/nip/recs/contraindications.pdf), the harmonized recommendations of the ACIP, AAP,and AAFP (available on the Internet at: www.cdc.gov/nip/recs/child-schedule.htm#Printable), the AAP's Red Book, and other relevant recommendations, Vaccine Information Statements, and manufacturers' package inserts. Contraindications and deferrals should be documented in the medical record.

Effective communication about vaccine benefits and risks

7. Parents/guardians and patients are educated about the benefits and risks of vaccination in a culturally appropriate manner and in easy-to-understand language.

Health care professionals should allow sufficient time with parents/guardians and adolescent patients to discuss the benefits of vaccines, the diseases they prevent, any known risks from vaccines, the immunization schedule and the need to receive vaccines at the recommended ages, and the importance of bringing the patient's hand-held vaccination record to each health care visit. Health care professionals should encourage parents/guardians and adolescent patients to take responsibility for ensuring that the patient is fully vaccinated.

For all commonly used childhood vaccines, all health care professionals are required by federal law to give Vaccine Information Statements (VIS) to vaccine recipients or their parents/guardians at each visit. A VIS is a vaccine-specific, two-page information sheet, produced by CDC, which describes the benefits and risks of a vaccine. If necessary, health care professionals should supplement the VIS with oral explanations or other written materials that are culturally and linguistically appropriate. Health care professionals should review written materials with patients and their parents/guardians and address questions and concerns.

Health care professionals should encourage parents/guardians and adolescent patients to inform the health care professional of adverse events following the vaccine to be administered and explain how to obtain medical care, if necessary.

See Standard 13 for a description of the Vaccine Adverse Events Reporting System (VAERS).

** Further information*
General vaccination information for health care professionals, parents, and members of the public may be obtained by calling the CDC National Immunization Information Hotline at 1-800-232-2522 (English) or 1-800-232-0233 (Spanish). Information about vaccine risk communication for health care professionals can be found on the Internet at: www.cdc.gov/nip/vacsafe/research/peds.htm and in the latest edition of the Red Book. Vaccine Information Statements are available in English and numerous other languages from State health departments and on the Internet at: www.cdc.gov/nip/publications/VIS/default.htm and www.immunize.org
Recommendations for national standards for culturally and linguistically appropriate services (CLAS) in health care may be found on the Internet at: www.omhrc.gov/omh/programs/2pgprograms/finalreport.pdf

Proper storage and administration of vaccines and documentation of vaccinations

8. Health care professionals follow appropriate procedures for vaccine storage and handling.

Vaccines should be handled and stored as recommended in the manufacturers' package inserts; the expiration date for each vaccine should be noted. Temperatures at which vaccines are stored and transported should be monitored and recorded twice daily. Summary information about vaccine storage and handling procedures are also available from state and local health departments and CDC.

Health care professionals should monitor vaccine inventory and undertake efforts to reduce wastage and loss.

** Further information*
CDC-recommended storage and handling procedures are available from CDC by calling 404-639-8222.

9. Up-to-date, written vaccination protocols are accessible at all locations where vaccines are administered.

To promote the safe and effective use of vaccines, health care professionals should maintain written protocols that detail the following: vaccine storage and handling; the recommended vaccination schedule, vaccine contraindications, and administration techniques; treatment and reporting of adverse events; vaccine benefit and risk communication; and

vaccination record maintenance and accessibility.

These protocols should be consistent with established guidelines, reviewed frequently, and revised as needed to assure that they remain up-to-date.

10. Persons who administer vaccines and staff who manage or support vaccine administration are knowledgeable and receive on-going education.

Health care professionals or others who administer vaccinations should be knowledgeable and receive continuing education in vaccine storage and handling; the recommended vaccine schedule, contraindications, and administration techniques; treatment and reporting of adverse events; vaccine benefit and risk communication; and vaccination record maintenance and accessibility. With appropriate training, and in accordance with state law/regulation/policy, persons other than physicians and nurses may administer vaccines. In addition, other staff should receive training and continuing education related to their specific roles and responsibilities that affect vaccination services.

** Further information CDC sponsors distance-based training opportunities (e.g., satellite broadcasts, web-based training, videotapes, self-administered print materials) for health care professionals. Information about training is available on the Internet at: www.cdc.gov/nip/ed*

11. Health care professionals simultaneously administer as many indicated vaccine doses as possible.

Administering vaccines simultaneously (at the same visit), in accordance with recommendations from the Advisory Committee on Immunization Practices, the American Academy of Pediatrics, and the American Academy of Family Physicians, is safe, effective, and indicated. Although the immunization schedule provides age flexibility for administering certain vaccine doses, simultaneous administration decreases the number of visits needed and the potential for missed doses, and enables earlier protection. When indicated vaccines are not simultaneously administered, arrangements should be made for the patient's earliest return to receive the needed vaccination(s).

** Further information*
Additional information on the safety of simultaneous vaccination may be found on the Internet at: www.cdc.gov/nip/vacsafe/research/simultaneous.htm

12. Vaccination records for patients are accurate, complete, and easily accessible.

Vaccination records for patients should be recorded on a standard form in an easily accessible location in the medical record to facilitate rapid review of vaccination status. Accurate record keeping helps to ensure that only needed vaccinations are given. As

required by federal law (42 US Code 300aa-25), health care professionals should assure that records contain the following information for each vaccination: the date of administration, the vaccine manufacturer and lot number, the signature and title of the person administering the vaccine, and the address where the vaccine was given. Vaccine refusal should also be documented.

The medical record maintained by the primary care provider should document all vaccines received, including those received at a specialist's office or in another health care setting. When a health care professional who does not routinely care for a patient vaccinates that patient, the patient's primary care provider should be informed.

All vaccinations administered should be reported to state or local immunization registries, where available, to ensure that each patient's vaccination history remains accurate and complete. Registries also may be useful for verifying the vaccination status of new patients, determining which vaccines are needed at a visit, printing official records, and providing reminders and recalls to parents.

Health care professionals should assure that each patient has a hand-held vaccination record that documents each vaccine received, including the date and the name of the health care professional who administered the vaccine. Health care professionals should encourage parents/guardians and adolescent patients to bring the patient's hand-held record to each health care visit so it can be updated.

** Further information*
The CDC maintains an Immunization Registry Clearinghouse. Information about this clearinghouse is available on the Internet at: www.cdc.gov/nip/registry/

13. Health care professionals report adverse events following vaccination promptly and accurately to the Vaccine Adverse Event Reporting System (VAERS) and are aware of a separate program, the National Vaccine Injury Compensation Program (VICP).

Health care professionals should promptly report all clinically significant adverse events following vaccination to the Vaccine Adverse Event Reporting System (VAERS) even if the health care professional is not certain that the vaccine caused the event. Health care professionals should document in detail the adverse event in the patient's medical record as soon as possible. Providers should be aware that parents/guardians and patients may report to VAERS, and that if they choose to do so, they are encouraged to seek the help of their health care provider.

The National Vaccine Injury Compensation Program (VICP) is a no-fault system that compensates persons of any age for injuries or conditions that may have been caused

by a vaccine recommended by CDC for routine use in children. Health care professionals should be aware of the VICP in order to address questions raised by parents/guardians and patients.

Since VAERS and VICP are separate programs, a report of an event to VAERS does not result in the submission of a compensation claim to VICP. A brief description and contact information for both programs is provided on each Vaccine Information Statement for those vaccines covered by the National Childhood Vaccine Injury Act.

** Further information*
Information about VAERS, as well as guidance about how to obtain and complete a VAERS form can be found on the Internet: www.vaers.org or by calling 1-800-822-7967. Information about the VICP is available on the Internet at: www.hrsa.gov/osp/vicp or by calling 1-800-338-2382.

14. All personnel who have contact with patients are appropriately vaccinated.

Health care professionals and other personnel who have contact with patients should be appropriately vaccinated. Offices and clinics should have policies to review and maintain the vaccination status of staff and trainees.

** Further information*
ACIP recommendations for vaccinating health care workers are available on the Internet at: ftp://ftp.cdc.gov/pub/publications/mmwr/rr/rr4618.pdf

Implementation of strategies to improve vaccination coverage

15. Systems are used to remind parents/guardians, patients, and health care professionals when vaccinations are due and to recall those who are overdue.

Evidence demonstrates that reminder/recall systems improve vaccination coverage.[11]

Patient reminder/recall interventions inform individuals that they are due (reminder) or overdue (recall) for specific vaccinations. Patient reminders/recalls can be mailed or communicated by telephone; an autodialer system can be used to expedite telephone reminders. Patients who might be at high risk for not complying with medical recommendations, for example those who have missed previous appointments, should receive more intensive follow-up.

Similarly, provider reminder/recall systems alert health care professionals when vaccines are due or overdue. Notices should be placed in patient charts or communicated to health care professionals by computer or other means. Immunization registries can facilitate automatic generation of reminder/recall notices.

16. Office- or clinic-based patient record reviews and vaccination coverage assessments are performed annually.

Evidence shows that assessments are most effective in improving vaccination coverage in a practice when they combine chart reviews to determine coverage with the provision of results to health care professionals and staff.[11]

Effective interventions also may incorporate incentives or compare performance to a goal or standard. Coverage should be assessed regularly so that reasons for low coverage in the practice, or in a sub-group of patients, are identified and addressed. For assistance in conducting vaccination coverage assessments, health care professionals should contact their state or local immunization program.

17. Health care professionals practice community-based approaches.

All health care professionals share in the responsibility to achieve the highest possible degree of community protection against vaccine-preventable diseases.

Immunization protects the entire community as well as the individual. No community is optimally protected against vaccine-preventable diseases without high vaccination coverage. Therefore, health care professionals should consider the needs of the community (especially underserved populations) as well as those of their patients. Community-based approaches may involve working with partners in the community, including public health departments, managed care organizations, other service providers such as the US Department of Agriculture's Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), advocacy groups, schools, and service organizations to determine community needs and develop vaccination services that address these needs.

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Organizations providing endorsement for the revised Standards for Child and Adolescent Immunization Practices

Advisory Committee on Immunization Practices

Albert B. Sabin Vaccine Institute

Ambulatory Pediatric Association

American Academy of Family Physicians

American Academy of Pediatrics

American Academy of Physician Assistants

American College of Emergency Physicians

American College of Osteopathic Pediatricians

American College of Preventive Medicine

American Medical Association

American Nurses Association

American Osteopathic Association

American Public Health Association

Association of Immunization Program Managers

Association of Maternal and Child Health Programs

Association of State and Territorial Health Officials

Center for Pediatric Research

Centers for Medicare and Medicaid ServicesCouncil of State and Territorial Epidemiologists

Every Child by Two

Health Resources and Services Administration

Immunization Action Coalition

Infectious Diseases Society of America

National Alliance for Hispanic Health

National Asian Women's Health Organization

National Assembly on School-Based Health Care

National Association for City and County Health Officials

National Association for Pediatric Nurse Practitioners

National Association of School Nurses

National Coalition for Adult Immunization

National Foundation for Infectious Diseases

National Institute of Allergy and Infectious Diseases

National Medical Association

National Network of Immunization Nurses and Associates

National Partnership for Immunization

National Perinatal Association Partnership for Prevention

Pediatric Infectious Disease Society

Project Immunize Virginia

Society for Adolescent Medicine

Society for Teachers of Family Medicine

Vaccine Education Center at the Children's Hospital of Philadelphia

The National Vaccine Advisory Committee (NVAC)

Committee History

The National Vaccine Advisory Committee (NVAC) was chartered in 1988 to advise and make recommendations to the director of the National Vaccine Program and the assistant secretary for health, Department of Health and Human Services, on matters related to the prevention of infectious diseases through immunization and the prevention of adverse reactions to vaccines.

The NVAC is composed of 15 members from public and private organizations representing vaccine manufacturers, physicians, parents, and state and local health agencies. In addition, representatives from governmental agencies involved in health care or allied services serve as ex-officio members of the NVAC.

Committee Members

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Stanford University School of Medicine Stanford, CA

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How to Read a CASA Summary Report: *Just for Starters*

Introduction

What is CASA?

The Clinic Assessment Software Application, CASA, is a menu-driven relational database developed by the National Immunization Program, Centers for Disease Control and Prevention (CDC), as an assessment tool for immunization clinics and providers. CASA is used for the data entry and analysis components of a practice-based vaccination assessment. It includes reminder and recall tracking capabilities, as well as many other special features. A CASA assessment can help providers understand their current vaccination coverage levels and diagnose their immunization delivery system problems. CASA provides an extensive body of data that can be accessed and organized to suit individual practice needs.

"Just for Starters" is an introduction to reading the CASA Summary Report. More in-depth materials and training are available from the CDC National Immunization Program.

NOTE WELL: The information in *"Just for Starters"* refers only to the CASA Summary Report, NOT to the CASA Diagnostic Report. A copy of a CASA Summary Report is attached.

CASA is constantly evolving. Definitions, vaccine-specific age criteria, and diagnostic capabilities are continuously being updated to reflect changing ACIP recommendations and user needs. This is not the last word.

Important Abbreviations and Definitions

Vaccines

DTP	In CASA reports, there is no distinction between DTP, DTaP, and DT
Polio	In CASA reports, there is no distinction between OPV and IPV.
Hib	In CASA reports, there is no distinction between Hib brands.

Though the CASA analyses do not distinguish among the various types, the specific types of vaccine (e.g., IPV vs. OPV, Hib brands) can be entered into CASA.

MOGE (pronounced *moe-ghee*)

Moved Or Going Elsewhere, i.e., there is documentation that the person has moved out of the jurisdiction or is going elsewhere for services. Documentation of <u>at least one</u> of the following is required:

- Copies of the child's records were transferred to a new practice.
- A letter was received from another provider that the patient is in a new practice.
- A mailed reminder card/letter was returned by the post office with no forwarding address.
- The parent/guardian informed the practice of the intent to transfer the child's care to another primary care provider during a previous office visit, home visit, or telephone contact.

Date of Assessment

Assessment Date: the date the assessment was conducted
Common Assessment Date: When doing assessments for a *group* of practices, each practice has its own assessment date. However, when comparing the vaccination levels at the sites, one review date must be used for all sites — for fairness' sake. That somewhat arbitrarily chosen, single point in time is called the Common Assessment Date.

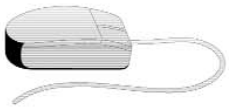
When conducting an assessment for one clinic/provider only, the Assessment Date and the Common Assessment Date are identical. The Common Assessment Date is what appears on the CASA Summary Report.

Up-To-Date (UTD)

UTD means "fully vaccinated for age." The number of doses of each vaccine that a child needs can be customized by the CASA user to reflect any criteria at any age. As a default, children are considered UTD if they have received the following number of vaccines by the ages shown. Please note that only the ages at which criteria change are shown. For example, the default criteria are the same at 12 months as they are at 7 months, the same at 18 months as at 16 months.

Age (in months)	Vaccine				
	DTP	***Polio***	***Hib***	***Hep B***	***MMR***
3	1	1	1	1	
5	2	2	2	2	
7	3	2	2	2	
16	4	3	3	3	1
24*	4	3	3	3	1

*criteria same as 16 months



UTD has two subsets:
(1) **UTD** at the benchmark ages (either 12 mos or 24 mos)
(2) **Late UTD** — i.e., UTD at the time of the CASA as sessment, but not at the benchmark age

Missed Opportunities (or Non-Simultaneous Vaccination)

Failure to give all needed vaccines simultaneously on the *last vaccination visit*. (There is a special CASA option that allows you to enter non-vaccination visits. Discussion of this option is beyond the scope of this introduction.)

"Lost" or "Lost to Follow-Up"

Eligible for vaccine, but not seen in the past 12 months

Not Eligible for Vaccine

Not eligible at 24 months because of minimum intervals needed between vaccine doses

Late Start Rates

Failure to begin office-based immunization by 3 months of age.
Late Start rate is calculated as the % of infants who do not have one DTP or polio or Hib vaccine by 3 months of age. The Hepatitis B vaccine given at birth is not counted.

Drop-Off Rates

The drop-off rate measures a sharp decline in DTP status from one age cohort to another.
The Drop-Off Rate is calculated as:

At 24 mos of age = % with DTP1 at 6 mos *minus* % with DTP4 at 24 mos
At 12 mos of age = % with DTP1 at 6 mos *minus* % with DTP3 at 12 mos

CASA Reports Immunization Levels in Several Ways

Please refer to the attached CASA Summary Report.

Not Up-To-Date:

This can be found on the flow chart after the second branching. As the words imply, this tells how many children in the cohort were missing one or more shots at the time of the assessment. The goal is to have 10% or less Not Up-To-Date.

UTD Grid and UTD Percentages Graph:

On WINCASA reports, these can be found on the pages after the flow chart.
The **UTD Grid** shows the % of children who were UTD for all needed vaccines by age.
The number of each vaccine needed to be considered Up-To-Date is included in the grid.
The "% Coverage" column shows the age-specific immunization levels.
The **UTD Percentages Graph** shows the same data in a graphic format.

UTD by vaccine dose:

CASA also reports the age-specific immunization levels for each specific dose of each vaccine (e.g., DTP4).

CASA Helps Pinpoint Specific Problems

CASA provides detailed reports on the specific diagnosis of the problem, for example, whether record-keeping and documentation are adequate, whether children start their series on time, whether and when patients drop out of the system, whether recall is used effectively, whether vaccines are given simultaneously. It can also be used to identify specific vaccines (e.g., MMR) or specific doses of vaccines (e.g., DTP4) that are a problem for the practice. This important diagnostic capability of CASA facilitates a focused — rather than a "laundry list" — approach to change at the site.

Although CASA can be used for adolescent and adult practices, the diagnostics capabilities are currently limited for these groups. Efforts to expand CASA for these groups are underway.

Moved Or Going Elsewhere (MOGE)

This can be found on the flow chart after the first branching. Take the MOGE number shown and divide it by the number of records reviewed (the very top of the flow chart).

If this is much *less* than 15% for a 24-month-old cohort, a question arises about the possibility of poor documentation. Other explanations (e.g., early archiving) are also possible — ask about these. Usually, a *low* % MOGE will be accompanied by a *high* % of children who are eligible for vaccine, but not seen in the past 12 months (i.e., "Lost" or "Lost to Follow-up"). Note that CASA does not include "MOGE" records in its analyses.

% Missed Opportunities (or Non-Simultaneous Vaccination)

This can be found on the flow chart after the third branching. If this is more than 5%, we ask why there was a failure to give all needed vaccines simultaneously on the previous vaccination visit. Good questions include:

- Is there an office **policy *against:***
  - simultaneous administration?
  - any particular vaccine (e.g., MMR or DTP4)?
  - vaccinating at the earliest time (e.g., MMR or DTP4 at 12 mos)?
- Does the whole **staff support** simultaneous administration? To pinpoint individuals who do not support simultaneous administration of vaccination, it may be useful to use a log book in which providers document their reasons for NOT immunizing simultaneously.
- How are **parents approached** when several injections are due? Are they subtly encouraged not to have several vaccines given on the same day? Providers who are not thoroughly convinced of the merits of simultaneous administration may give negative messages subconsciously. It may not be WHAT is said, but HOW it is said that dissuades parents.
- Are **parents prepared** to expect 3 or 4 inoculations at the next visit? It helps to say something like, for example, "We want you to come back in 2 months. That's Quinn's 6 month birthday -- right before Labor Day. At that visit, he'll get the same vaccines as today, plus his last hepatitis B."

% Not Eligible for Vaccine

This can be found on the flow chart after the 4th branching. It shows the proportion of children who presented, but could not be vaccinated because the minimal interval between doses had not elapsed. If this is more than 5-10%, it may be because there are many patients who start late (see "Late Start Rates" below). However, if the Late Start Rate is NOT also high, good questions include:

- Do providers follow **false contraindications**? Note that a high proportion of children falling behind between DTP1 and DTP2 may indicate use of false contraindications early in the series.
- Is an effective **reminder/ recall system** used? Note that drop-offs later in the series are more likely due to general reminder/recall deficiencies. (See "Drop-Off Rates" below)
- Is the **accelerated schedule** used?

% Last Visit >= 12 Months Ago (Lost)

This can be found on the flow chart after the last branching. A high % of patients who are eligible for vaccine, but who have not been seen in the past year may mean that there are many patients who have moved or gone elsewhere for services without

documentation. Good questions include:

- Are appointment notices, reminder messages, and recall messages simply not arriving?
  - Does the clerical staff update the record of each patient's address and phone number at every visit?
  - Are changes in patient addresses & phone numbers regularly exchanged with other programs (e.g., WIC)?
- If tracking is being done aggressively, is information from the tracking system making it to the patient's record? (e.g., if appointment notices are returned with a "No Forwarding Address" stamp, is that information recorded in the chart?)
- Is there a high Drop-Off Rate, either early or later in the 1st 2 years of life? (See "Drop-Off Rates" below)
- Is there a high % of Late Starts? (See "Late Start Rates" below) Are (managed care) children who are registered as patients at this facility aware that this is their primary care site?

Late Start Rates

This can be found on the first page of the summary report, toward the bottom. It indicates the % of children who start at > 3 months. If this is more than 10%, there are 2 main possibilities:

a) many infants are not reporting to the practice within 3 months of birth or
b) many infants who are reporting to the practice within 3 months of birth are not being vaccinated then.

To determine which it is, you can ask the staff their impressions and/or (if documentation is good) randomly select a small % of records to determine if there is a high rate of non-vaccination at the 2 month visit.

If many infants are not reporting by 3 months of age, ask;

- Would the practice's relationship with the local birthing sites and OB practices allow prenatal immunization education for parents emphasizing the importance of a timely first visit?
- Is a postpartum intervention possible? Postpartum interventions range from post cards and phone calls to new moms to hospital/home visits for "high risk" infants.
- Are (managed care) children who are registered as patients at this facility aware that this is their primary care site?

If many infants are not being vaccinated at the early visit, ask:

- Are one or more providers following false contraindications (e.g., prematurity, mild illness)?

Drop-Off Rates

This can be found on the first page of the summary report, toward the bottom and shows the % of children who begin the DTP series by 6 months of age, but fail to complete it by 12 or 24 months of age. If this is more than 10% at either age, good questions include:

- Are there only **one or two specific ages** at which the problem is most severe? Sometimes specific interventions can be focused at particular problem times during the immunization series (e.g., a reminder birthday card at one year, simultaneous administration of DTP4 with MMR).

- Is an aggressive **reminder/recall system** in place for all ages and all antigens? Reminder notices or calls should come to parents before each immunization due date. Recall messages to families who don't come in for the visit should start immediately following the missed visit and should be repeated at varying times of the day and evening. If a reminder/recall system is in place, is its importance articulated to parents. In other words, is there parent "buy-in" of the system?

- Are there **physical barriers** (e.g., long waiting times, long distances to the site, limited parking) that discourage parents from returning for needed immunizations? Client-flow observations and adjustments in office hours and appointment schedules should be considered.

- Are there **psychological barriers** that discourage parents from returning for needed immunizations? Non-affirming attitudes of office staff and general discourtesy can cause parents to procrastinate (or boycott) subsequent immunization visits. Patient surveys and suggestions boxes are often helpful in identifying barriers. They also encourage staff to be more responsive to patients.

- Are parents personally informed at each visit what additional vaccine doses are needed and when they are **expected to return** to the practice? One-on-one simple, direct personal communication can enforce the importance of remaining on schedule and produce a vivid reminder of what is due and when to return. (For example, a provider might say: "Here are the three points I want you to remember about returning for immunizations...")

- Is there **non-simultaneous administration** of vaccine? (e.g., DTP4 is not given with MMR)

Common CASA Questions

If a child got NO vaccines at his last office visit because of an invalid contraindication (e.g., minor illness), will that be counted as a "Missed Opportunity" on a CASA Summary Report?

No, not if a standard CASA assessment is done because this information would not be collected. The CASA definition of "Missed Opportunity" (also known as Non-Simultaneous Vaccination) is "failure to give all needed vaccines simultaneously on the last *vaccination visit*." If a child got NO vaccines at his last *office visit* because of an invalid contraindication, CASA would not have a record of that visit at all. The child would NOT have an apparent "Missed Opportunity."

It is important to note that the CASA assessment can be modified prior to data entry and/or the Missed Opportunity Conversation Report can be used to obtain additional information on missed opportunities.

A child got only one of the recommended vaccines at her first vaccination visit, but at the MOST RECENT vaccination visit she got all needed vaccines. Will her record be counted as a "Missed Opportunity?"

Again, not if a standard CASA assessment is done. A "Missed Opportunity" is failure to give all needed vaccines simultaneously on the last vaccination visit. If a child received only one of the recommended vaccines at her first vaccination visit, but all the needed vaccines at the last vaccination visit, CASA would report on the latest visit. The child would NOT have an apparent "Missed Opportunity."

If a newborn received Hepatitis B vaccine in the hospital, but did not show up until 4 months of age at his primary care site, will the record be counted as a Late Start?

Yes. By definition, a Late Start is failure to begin *office-based* immunization by 3 months of age. Of course, if the first set of DTP, polio, or Hib vaccines is given anywhere and then recorded in the office record, that is sufficient.

What are the age definitions used in CASA?

Age in months ➳	3	5	7	12	15	16	19	24
# of days ➳	92	153	214	366	458	488	549	732

B

Atlanta, Georgia
February, 2002

CASA Summary Report

Assessment Site: Dr Leeuwenhoek - Assessment Date: 03/14/2001

Records Selected:	50	- MOGE*:	2	= Records Analyzed:	48	(24 - 35 Months)
	0	- MOGE*:	0	= Records Analyzed:	0	(12 - 23 Months)
Records Excluded:	Kids < 12 Months:		0	Kids > 35 Months:	0	Deceased: 0

IMMUNIZATION STATUS

	UTD (1)	Late UTD (1a)	NOT UTD -- Reasons:			
			MISSED OPPORTUNITIES for Simultaneous Vax?			
			YES (2)	NO		
				Eligible For Vaccine? Yes - Last Visit Was:		
				< 12 Mo. Ago	>= 12 Mo. Ago	No (3)
24 - 35 Mo. Age Group @ 24 Mo. Of Age: (4)	58.33	2.08	4.17	2.08	33.33	0.00
@ 12 Mo. Of Age:	60.42	N/A	2.08	37.50	N/A	0.00
12 - 23 Mo. Age Group @ 12 Mo. Of Age:	******	******	*********	********	N/A	********

1. UTD (Up-To-Date) By 12 Months = 3 DTP, 2 POLIO, 2 HIB, 2 Hep B
   UTD By 24 Months = 4 DTP, 3 Polio, 1 MMR, 3 HiB, 3 HepB

1a. Has 3 DTP, 2 POLIO, 2 HIB, 2 HepB By Date Of Assessment But NOT By 12 Months
   **Has 4 DTP, 3 Polio, 1 MMR, 3 HiB, 3 HepB By Date of Assessment, But Not By 24 Months

2. Missed Opportunity = Failure To Administer Needed Vaccines Simultaneously On Last Visit

3. Not Eligible For Vaccine On Date of Assessment Because Of Minimum Spacing Needed Between Doses.

4. Children Who Could Have Been Brought Up-To-Date With 1 Additional Visit By

24 Months Of Age: #	9	18.75	%
Number With 1 Vaccine Needed:	6	66.67	%
Number With 2 Vaccines Needed:	1	11.11	%
Number With 3 Vaccines Needed:	2	22.22	%
Number With 4+ Vaccines Needed:	0	0.00	%

****

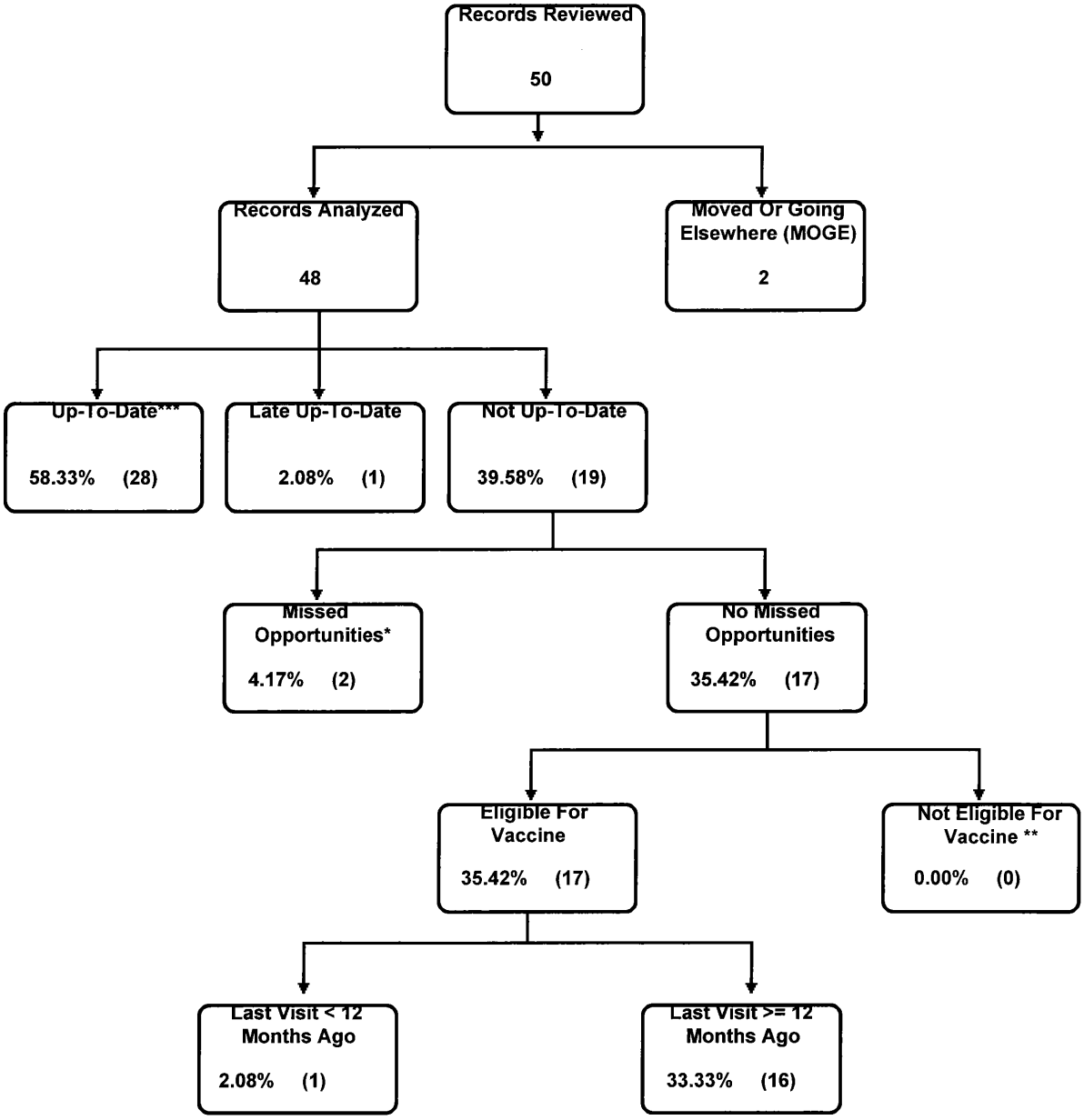
LATE - START RATES (Beginning > 3 Months of Age):	18.75	% (24 - 35 Month Age Group)
(Beginning > 3 Months of Age):	*********	% (12 - 23 Month Age Group)
DROP - OFF RATES* 24 - 35 Month Age Group:	29.17	% (24 - Month Status)
24 - 35 Month Age Group:	27.08	% (12 - Month Status)
12 - 23 Month Age Group:	0	% (12 - Month Status)

* MOGE = Moved (out of jurisdiction) Or Going Elsewhere (for services).
* Drop - Off Rate @ 24 Months of Age = %DTP1 @ 6 Mo. - %DTP4 @ 24 Mo.
* Drop - Off Rate @ 12 Months of Age = %DTP1 @ 6 Mo. - %DTP3 @ 12 Mo.
DTP = DTP/DT/DTaP
** Late UTD @ 24 Months May Include MMR Given Before 1 Year

Date Run: 02/12/2002 Time Run: 06:45:51

Immunization Status At 24 Months Of Age For Dr Leeuwenhoek

For Kids Age 24-35 Months Of Age



* Failure To Administer Needed Vaccines Simultaneously On Last Immunization Visit

** Not Eligible For Vaccine Because Of Minimum Spacing Needed Between Doses

*** Up-To-Date Is 4 DTP, 3 Polio, 1 MMR, 3 HiB, 3 HepB

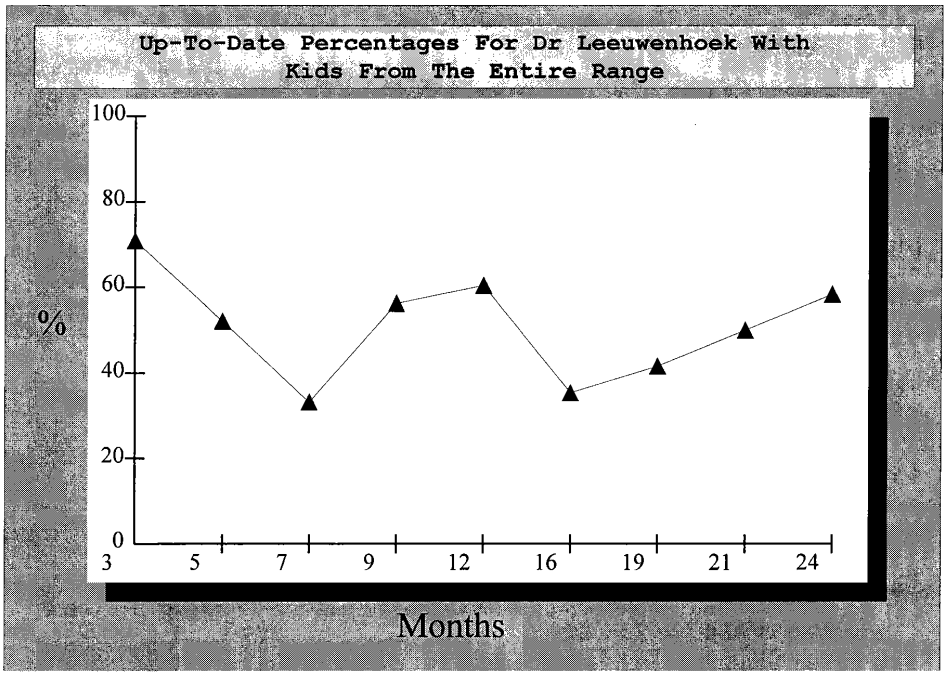
Date Run: 02/12/2002 Time Run: 06:46:05

Up-To-Date Chart For Dr Leeuwenhoek; Assessment Date: 03/14/2001

The Denominator For This Report Is The Entire Range Of Kids

UTD Grid	DTP	POLIO	Hib	HepB	MMR	%Coverage
At 3 Months:	1	1	1	1		70.83
At 5 Months:	2	2	2	2		52.08
At 7 Months:	3	2	2	2		33.33
At 9 Months:	3	2	2	2		56.25
At 12 Months:	3	2	2	2		60.42
At 16 Months:	4	3	3	3	1	35.42
At 19 Months:	4	3	3	3	1	41.67
At 21 Months:	4	3	3	3	1	50.00
At 24 Months:	4	3	3	3	1	58.33

Date Run: 02/12/2002 Time Run: 09:05:46


Up-To-Date Percentages For Dr Leeuwenhoek With Kids From The Entire Range
100
80
60
%
40
20
0
3
5
7
9
12
16
19
21
24
Months

Single Antigen Assessment Results for Dr Leeuwenhoek for the Dates-of-Birth Between 03/01/1998 and 02/28/1999 in the Client files

Location:	**Your Town, US**	**Total Records In Clinic:**	270
Reviewer:	**IDB**	**Records Sampled:**	50
Date of Assessment:	**03/14/2001**	**Records Outside Of Range:**	0
Common Review Date:	**03/01/2001**	**Moved Or Gone Elsewhere:**	2
Assessment Range:	**24 To 035 Months**	**Total Records Reviewed:**	48

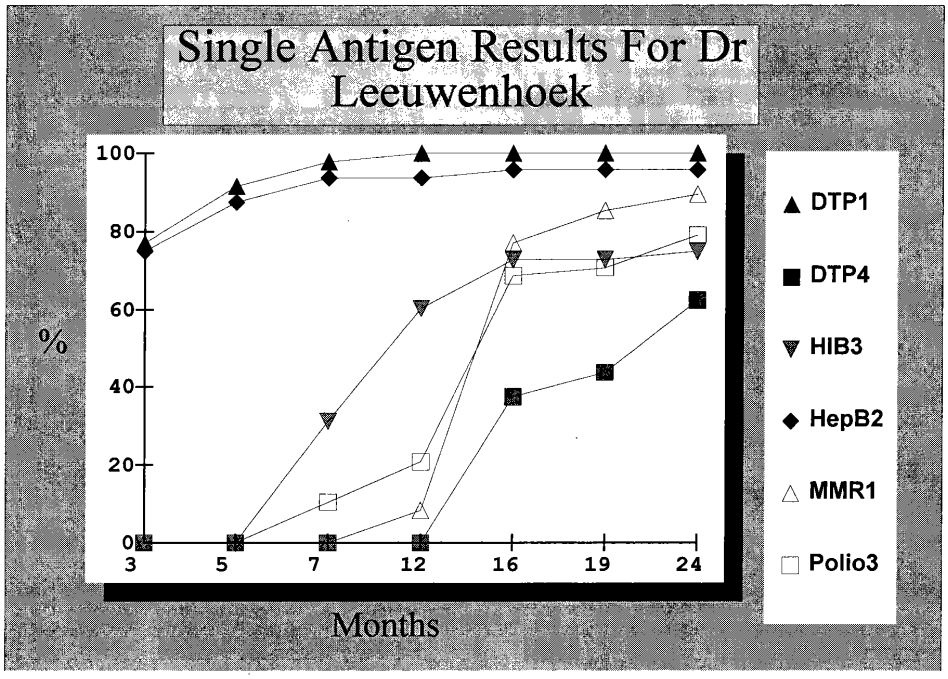
Months:	3	5	7	12	16	19	24
	#|%	#|%	#|%	#|%	#|%	#|%	#|%
DTP1:	37|77	44|92	47|98	48|100	48|100	48|100	48|100
DTP2:		27|56	35|73	41|85	45|94	47|98	47|98
DTP3:			17|35	31|65	38|79	38|79	40|83
DTP4:					18|38	21|44	30|63
Polio1:	38|79	44|92	47|98	48|100	48|100	48|100	48|100
Polio2:		27|56	35|73	41|85	45|94	47|98	47|98
Polio3:			5|10	10|21	33|69	34|71	38|79
MMR1:				4|8	37|77	41|85	43|90
HIB1:	36|75	41|85	44|92	46|96	47|98	47|98	48|100
HIB2:		26|54	34|71	38|79	43|90	45|94	45|94
HIB3:			15|31	29|60	35|73	35|73	36|75
HIB4:					21|44	24|50	29|60
HB1:	45|94	45|94	46|96	46|96	46|96	46|96	47|98
HB2:	36|75	42|88	45|94	45|94	46|96	46|96	46|96
HB3:			23|48	34|71	41|85	44|92	44|92
RTV1:	0|0	0|0	0|0	0|0	0|0	0|0	0|0
RTV2:		0|0	0|0	0|0	0|0	0|0	0|0
RTV3:			0|0	0|0	0|0	0|0	0|0
VZV1:					29|60	32|67	33|69
CPNU1:	0|0	0|0	0|0	0|0	0|0	0|0	0|0
CPNU2:		0|0	0|0	0|0	0|0	0|0	0|0
CPNU3:			0|0	0|0	0|0	0|0	0|0
CPNU4:					0|0	0|0	0|0
DENOM.	48	48	48	48	48	48	48

*DTP = DT/DTP/DTAP
*Polio = IPV/OPV
*MMR = MMR >= 365 Days
*VZV = VZV >= 365 Days

CPNU = Childhood Pneumococcal
0 Had ChickenPox

Date Run: 02/12/2002 Time Run: 06:51:32

B


Single Antigen Results For Dr Leeuwenhoek
100
80
60
40
20
0
%
3
5
7
12
16
19
24
Months
DTP1
DTP4
HIB3
HepB2
MMR1
Polio3

APPENDIX C

Adult and Adolescent Immunization

Recommended Adult Immunization Schedule United States, 2002-2003

and

Recommended Immunizations for Adults with Medical Conditions United States, 2002-2003

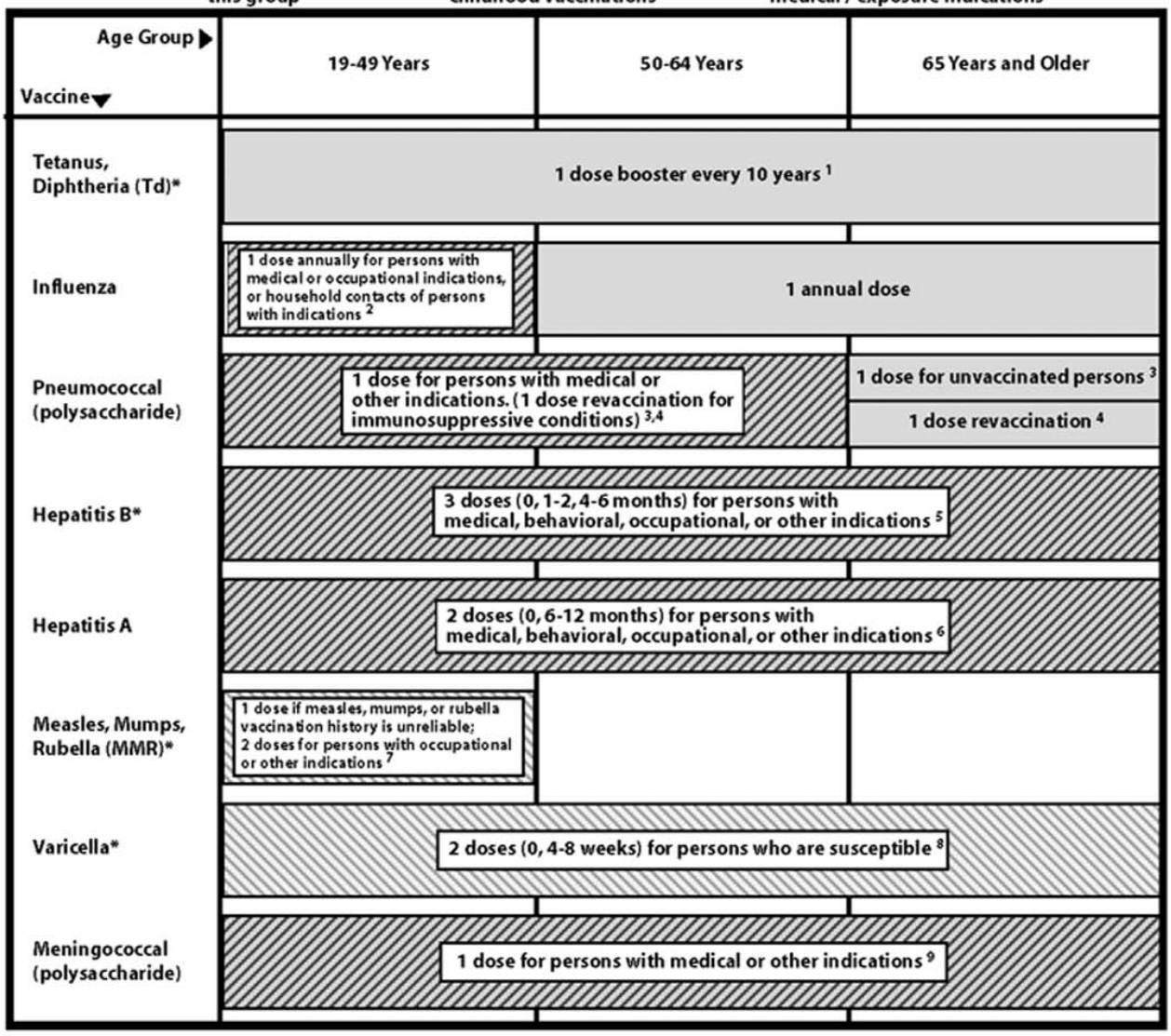
Summary of Recommendations Published by

The Advisory Committee on Immunization Practices

C

Department of Health and Human Services
Centers for Disease Control and Prevention

Recommended Adult Immunization Schedule, United States, 2002-2003



See Footnotes for Recommended Adult Immunization Schedule, United States, 2002-2003 on back cover.

*Covered by the Vaccine Injury Compensation Program. For information on how to file a claim call 800-338-2382. Please also visit www.hrsa.gov/osp/vicp To file a claim for vaccine injury write: U.S. Court of Federal Claims, 717 Madison Place, N.W., Washington D.C. 20005. 202 219-9657.

This schedule indicates the recommended age groups for routine administration of currently licensed vaccines for persons 19 years of age and older. Licensed combination vaccines may be used whenever any components of the combination are indicated and the vaccine's other components are not contraindicated. Providers should consult the manufacturers' package inserts for detailed recommendations.

Report all clinically significant post-vaccination reactions to the Vaccine Adverse Event Reporting System (VAERS). Reporting forms and instructions on filing a VAERS report are available by calling 800-822-7967 or from the VAERS website at www.vaers.org.

For additional information about the vaccines listed above and contraindications for immunization, visit the National Immunization Program Website at www.cdc.gov/nip/ or call the National Immunization Hotline at 800-232-2522 (English) or 800-232-0233 (Spanish).

Approved by the Advisory Committee on Immunization Practices (ACIP), and accepted by the American College of Obstetricians and Gynecologists (ACOG) and the American Academy of Family Physicians (AAFP)

Recommended Immunizations for Adults with Medical Conditions, United States, 2002-2003

For all persons in this group | Catch-up on childhood vaccinations | For persons with medical / exposure indications | Contraindicated

Medical Conditions \ Vaccine	Tetanus-Diphtheria (Td)*	Influenza	Pneumococcal (polysaccharide)	Hepatitis B*	Hepatitis A	Measles, Mumps, Rubella (MMR)*	Varicella*
Pregnancy		A					
Diabetes, heart disease, chronic pulmonary disease, chronic liver disease, including chronic alcoholism		B	C		D		
Congenital immunodeficiency, leukemia, lymphoma, generalized malignancy, therapy with alkylating agents, antimetabolites, radiation or large amounts of corticosteroids			E				F
Renal failure / end stage renal disease, recipients of hemodialysis or clotting factor concentrates			E	G			
Asplenia including elective splenectomy and terminal complement component deficiencies			E, H, I				
HIV infection			E, J			K	

A. If pregnancy is at 2nd or 3rd trimester during influenza season.

B. Although chronic liver disease and alcoholism are not indicator conditions for influenza vaccination, give 1 dose annually if the patient is ≥ 50 years, has other indications for influenza vaccine, or if the patient requests vaccination.

C. Asthma is an indicator condition for influenza but not for pneumococcal vaccination.

D. For all persons with chronic liver disease.

E. Revaccinate once after 5 years or more have elapsed since initial vaccination.

F. Persons with impaired humoral but not cellular immunity may be vaccinated. *MMWR* 1999; 48 (RR-06): 1-5.

G. Hemodialysis patients: Use special formulation of vaccine (40 ug/mL) or two 1.0 mL 20 ug doses given at one site. Vaccinate early in the course of renal disease. Assess antibody titers to hep B surface antigen (anti-HBs) levels annually. Administer additional doses if anti-HBs levels decline to < 10 milliinternational units (mIU)/ mL.

H. Also administer meningococcal vaccine.

I. Elective splenectomy: vaccinate at least 2 weeks before surgery.

J. Vaccinate as close to diagnosis as possible when CD4 cell counts are highest.

K. Withhold MMR or other measles containing vaccines from HIV-infected persons with evidence of severe immunosuppression. *MMWR* 1996; 45: 603-606, *MMWR* 1992; 41 (RR-17): 1-19.

Footnotes for Recommended Adult Immunization Schedule, United States, 2002-2003

1. **Tetanus and diphtheria (Td)**—A primary series for adults is 3 doses: the first 2 doses given at least 4 weeks apart and the 3rd dose, 6-12 months after the second. Administer 1 dose if the person had received the primary series and the last vaccination was 10 years ago or longer. *MMWR* 1991; 40 (RR-10): 1-21. The ACP Task Force on Adult Immunization supports a second option: a single Td booster at age 50 years for persons who have completed the full pediatric series, including the teenage/young adult booster. *Guide for Adult Immunization*. 3rd ed. ACP 1994: 20.

2. **Influenza vaccination**—Medical indications: chronic disorders of the cardiovascular or pulmonary systems including asthma; chronic metabolic diseases including diabetes mellitus, renal dysfunction, hemoglobinopathies, immunosuppression (including immunosuppression caused by medications or by human immunodeficiency virus [HIV]), requiring regular medical follow-up or hospitalization during the preceding year; women who will be in the second or third trimester of pregnancy during the influenza season. Occupational indications: health-care workers. Other indications: residents of nursing homes and other long-term care facilities; persons likely to transmit influenza to persons at high-risk (in-home care givers to persons with medical indications, household contacts and out-of-home caregivers of children birth to 23 months of age, or children with asthma or other indicator conditions for influenza vaccination, household members and care givers of elderly and adults with high-risk conditions); and anyone who wishes to be vaccinated. *MMWR* 2002; 51 (RR-3): 1-31.

3. **Pneumococcal polysaccharide vaccination**—Medical indications: chronic disorders of the pulmonary system (excluding asthma), cardiovascular diseases, diabetes mellitus, chronic liver diseases including liver disease as a result of alcohol abuse (e.g., cirrhosis), chronic renal failure or nephrotic syndrome, functional or anatomic asplenia (e.g., sickle cell disease or splenectomy), immunosuppressive conditions (e.g., congenital immunodeficiency, HIV infection, leukemia, lymphoma, multiple myeloma, Hodgkins disease, generalized malignancy, organ or bone marrow transplantation), chemotherapy with alkylating agents, anti-metabolites, or long-term systemic corticosteroids. Geographic/other indications: Alaskan Natives and certain American Indian populations. Other indications: residents of nursing homes and other long-term care facilities. *MMWR* 1997; 47 (RR-8): 1-24.

4. **Revaccination with pneumococcal polysaccharide vaccine**—One time revaccination after 5 years for persons with chronic renal failure or nephrotic syndrome, functional or anatomic asplenia (e.g., sickle cell disease or splenectomy), immunosuppressive conditions (e.g., congenital immunodeficiency, HIV infection, leukemia, lymphoma, multiple myeloma, Hodgkins disease, generalized malignancy, organ or bone marrow transplantation), chemotherapy with alkylating agents, anti-metabolites, or long-term systemic corticosteroids. For persons 65 and older, one-time revaccination if they were vaccinated 5 or more years previously and were aged less than 65 years at the time of primary vaccination. *MMWR* 1997; 47 (RR-8): 1-24.

5. **Hepatitis B vaccination**—Medical indications: hemodialysis patients, patients who receive clotting-factor concentrates. Occupational indications: health-care workers and public-safety workers who have exposure to blood in the workplace, persons in training in schools of medicine, dentistry, nursing, laboratory technology, and other allied health professions. Behavioral indications: injecting drug users, persons with more than one sex partner in the previous 6 months, persons with a recently acquired sexually-transmitted disease (STD), all clients in STD clinics, men who have sex with men. Other indications: household contacts and sex partners of persons with chronic HBV infection, clients and staff of institutions for the developmentally disabled, international travelers who will be in countries with high or intermediate prevalence of chronic HBV infection for more than 6 months, inmates of correctional facilities. *MMWR* 1991; 40 (RR-13): 1-25. (www.cdc.gov/travel/diseases/hbv.htm)

6. **Hepatitis A vaccination**—For the combined HepA-HepB vaccine use 3 doses at 0, 1, 6 months). Medical indications: persons with clotting-factor disorders or chronic liver disease. Behavioral indications: men who have sex with men, users of injecting and noninjecting illegal drugs. Occupational indications: persons working with HAV-infected primates or with HAV in a research laboratory setting. Other indications: persons traveling to or working in countries that have high or intermediate endemicity of hepatitis A. *MMWR* 1999; 48 (RR-12): 1-37. (www.cdc.gov/travel/diseases/hav.htm)

7. **Measles, Mumps, Rubella vaccination (MMR)**—Measles component: Adults born before 1957 may be considered immune to measles. Adults born in or after 1957 should receive at least one dose of MMR unless they have a medical contraindication, documentation of at least one dose or other acceptable evidence of immunity. A second dose of MMR is recommended for adults who:
   - are recently exposed to measles or in an outbreak setting
   - were previously vaccinated with killed measles vaccine
   - were vaccinated with an unknown vaccine between 1963 and 1967
   - are students in post-secondary educational institutions
   - work in health care facilities
   - plan to travel internationally

   Mumps component: 1 dose of MMR should be adequate for protection. Rubella component: Give 1 dose of MMR to women whose rubella vaccination history is unreliable and counsel women to avoid becoming pregnant for 4 weeks after vaccination. For women of child-bearing age, regardless of birth year, routinely determine rubella immunity and counsel women regarding congenital rubella syndrome. Do not vaccinate pregnant women or those planning to become pregnant in the next 4 weeks. If pregnant and susceptible, vaccinate as early in postpartum period as possible. *MMWR* 1998; 47 (RR-8): 1-57.

8. **Varicella vaccination**—Recommended for all persons who do not have reliable clinical history of varicella infection, or serological evidence of varicella zoster virus (VZV) infection; health-care workers and family contacts of immunocompromised persons, those who live or work in environments where transmission is likely (e.g., teachers of young children, day care employees, and residents and staff members in institutional settings), persons who live or work in environments where VZV transmission can occur (e.g., college students, inmates and staff members of correctional institutions, and military personnel), adolescents and adults living in households with children, women who are not pregnant but who may become pregnant in the future, international travelers who are not immune to infection. Note: Greater than 90% of U.S. born adults are immune to VZV. Do not vaccinate pregnant women or those planning to become pregnant in the next 4 weeks. If pregnant and susceptible, vaccinate as early in postpartum period as possible. *MMWR* 1996; 45 (RR-11): 1-36, *MMWR* 1999; 48 (RR-6): 1-5.

9. **Meningococcal vaccine (quadrivalent polysaccharide for serogroups A, C, Y, and W-135)**—Consider vaccination for persons with medical indications: adults with terminal complement component deficiencies, with anatomic or functional asplenia. Other indications: travelers to countries in which disease is hyperendemic or epidemic ("meningitis belt" of sub-Saharan Africa, Mecca, Saudi Arabia for Hajj). Revaccination at 3-5 years may be indicated for persons at high risk for infection (e.g., persons residing in areas in which disease is epidemic). Counsel college freshmen, especially those who live in dormitories, regarding meningococcal disease and the vaccine so that they can make an educated decision about receiving the vaccination. *MMWR* 2000; 49 (RR-7): 1-20. Note: The AAFP recommends that colleges should take the lead on providing education on meningococcal infection and vaccination and offer it to those who are interested. Physicians need not initiate discussion of the meningococcal quadravalent polysaccharide vaccine as part of routine medical care.

Standards for Adult Immunization Practices

Copies may be requested from:

Centers for Disease Control and Prevention
National Immunization Program
Resource Center
1600 Clifton Road
Mailstop E-34
Atlanta, GA 30333-0418

Online ordering is available through:
www.cdc.gov/nip/publications

The Standards for Adult Immunization Practices
are also published in
the *American Journal of Preventive Medicine* 2003;25(2)

Introduction

As a result of successful immunization practices geared toward infants and children in the United States, the incidence of childhood vaccine-preventable diseases has declined dramatically. However, similar success among adults has not been achieved.

All adults should be immune to measles, mumps, rubella, tetanus, diphtheria, and varicella. All those aged 50 or older, and younger persons at high risk should receive influenza vaccine annually; all those aged 65 or older, and younger persons at high risk, should receive pneumococcal vaccine. Adults susceptible to hepatitis A, hepatitis B, and polio should be vaccinated if they are at risk for exposure to an infection. Ideally, recommended vaccines should be given to all adults as a routine part of health care.

Adults suffer the vast majority of vaccine-preventable disease in the U.S. During average influenza seasons, up to 40 million Americans may suffer from influenza infection, approximately 100,000 are hospitalized, and approximately 40,000 die of influenza and its complications.[1,2] Pneumococcal infections account for 100,000 to 135,000 hospitalizations for pneumonia, more than 60,000 cases of bacteremia and other forms of invasive disease, and about 7,000 death from invasive pneumococcal disease each year.[3,4,5] More than 75,000 persons, mostly adolescents and adults, contract hepatitis B each year.[6,7] There are approximately 4,000 to 5,000 deaths due to hepatitis B each year, mainly among adults.[8] Approximately 8 million young women are unprotected against rubella, putting their infants at risk for congenital rubella syndrome if these women should become pregnant.[9] Up to half of all Americans age 50 and older have not received all of their recommended immunizations against tetanus and diphtheria.[10]

Today, vaccines are safe, effective, and readily available. Benefits of vaccination include reduced disease incidence, morbidity and mortality, and reduced health care costs. However, vaccines remain underutilized among adults, especially among persons at high risk for infection and complications of disease, and among certain racial/ethnic populations. For instance, the rates of influenza and pneumococcal vaccination in African American and Hispanic populations are significantly lower than those among whites.[11]

The U.S. Department of Health and Human Services' Healthy People 2010 outlines a comprehensive, nationwide health promotion and disease prevention agenda.[12] There are 8 objectives that relate to adult immunizations or vaccine-preventable diseases. Achieving these objectives will require a dramatic increase from current coverage levels.

For example, for influenza and pneumococcal vaccination of adults age 65 and older, the target coverage is 90% for annual influenza immunization and 90% for one dose of pneumococcal vaccine. In 2002, national statistics demonstrated rates of only 66% and 56%, respectively.13 Among adults aged 65 years or less at high risk due to medical, behavioral, or environmental risk factors, even greater increases will be required to reach the 2010 targets.

In 1990, the National Coalition for Adults Immunization (NCAI) developed the first Standards for Adult Immunization Practices, which were endorsed by more than 60 professional organizations from the public and private sectors.[14] In January 1994, the National Vaccine Advisory Committee (NVAC) reviewed the status of adult immunization in the United States and presented specific goals and recommendations for improvement.[15] In 2000, NVAC issued a report on adult immunization programs in nontraditional settings. This report included quality standards for these programs as well as guidance for program evaluation.[16]

To reflect the recommendations and standards in these recent reports and the Healthy People 2010 coverage goals, the NVAC and NCAI have revised the 1990 Standards. The revised Standards are more comprehensive than the previous version and evidence-based medicine has been used to support these Standards wherever possible.[17] The Standards supplement research with expert consensus in areas where research does not offer guidance but experience does.

Today, more tools are available to support immunization providers. The revised Standards include links to web sites that contain information on model standing order policies, instructions for setting up reminder/recall systems, and templates for personal vaccination records.

The revised Standards for Adult Immunization Practices provide a concise, convenient summary of the most desirable immunization practices. The Standards have been widely endorsed by major professional organizations. This revised version of the Standards for Adult Immunization Practices is recommended for use by all health care professionals and payers in the public and private sectors who provide immunizations for adults. Everyone involved in adult immunization should strive to follow these Standards. Not all practices and programs have the resources necessary to fully implement the Standards, nevertheless, those lacking the resources should find the Standards useful to guide current practice and to guide the process of defining immunization needs and obtaining additional resources in the future.

Standards for Adult Immunization Practices

Make vaccinations available
1. Adult vaccination services are readily available.
2. Barriers to receiving vaccines are identified and minimized.
3. Patient "out of pocket" vaccination costs are minimized.

Assess patients' vaccination status
4. Health care professionals routinely review the vaccination status of patients.
5. Health care professionals assess for valid contraindications.

Communicate effectively with patients
6. Patients are educated about risks and benefits of vaccination in easy-to-understand language.

Administer and document vaccinations properly
7. Written vaccination protocols are available at all locations where vaccines are administered.
8. Persons who administer vaccines are properly trained.
9. Health care professionals recommend simultaneous administration of all indicated vaccine doses.
10. Vaccination records for patients are accurate and easily accessible.
11. All personnel who have contact with patients are appropriately vaccinated.

Implement strategies to improve vaccination rates
12. Systems are developed and used to remind patients and health care professionals when vaccinations are due and to recall patients who are overdue.
13. Standing orders for vaccinations are employed.
14. Regular assessments of vaccination coverage levels are conducted in a provider's practice.

Partner with the community
15. Patient-oriented and community-based approaches are used to reach target populations.

The Standards

Make Vaccinations Available

Standard 1: *Adult vaccination services are readily available*
Primary care health care professionals who serve adults should always include routinely recommended vaccinations as part of their care. Specialists, whose patients may be at increased risk of vaccine-preventable diseases, also should include routinely recommended vaccinations as part of their care. For selected vaccines (e.g., meningococcal vaccine for college entrants, vaccines for international travelers) patients may be referred to another provider.
Standard 2: *Barriers to receiving vaccines are identified and minimized*
Barriers to receiving vaccines may include requiring a physical examination before vaccination, requiring an additional visit for vaccination, long waiting periods, and lack of educational materials that are culturally appropriate. Prior to vaccine administration, simply observing the patient, asking if the patient is well and questioning the patient/guardian about vaccine contraindications is sufficient.

Standard 3: *Patient "out of pocket" vaccination costs are minimized*
Resources should be identified to keep patient vaccination costs as low as possible, specifically for those patients aged 65 years or older and for vaccines not covered by Medicare Part B.

In the public sector, patient fees should include only the cost of vaccine and administration that cannot be funded through another source. In the private sector, routinely recommended vaccination services should be included in basic benefits packages. System and policy changes should be addressed to provide adequate reimbursement to providers for delivering vaccinations to their adult population.

Assess Patients' Vaccination Status

Standard 4: *Health care professionals routinely review the vaccination status of patients*
Health care professionals should review and document the vaccination status of all new patients during initial office visits and also review vaccination status on an annual basis thereafter. Health care professionals should ascertain if the patient has medical risk factors, lifestyle risk factors, or an occupation for which certain vaccines may be indicated. Health care professionals should record this information in the patient's chart and preventive health summary. Health care professionals should routinely review pneumococcal vaccination status at the time of influenza vaccination.

Standard 5: *Health care professionals assess for valid contraindications*
Failure to differentiate between valid and invalid contraindications often results in the needless deferral of indicated vaccinations. Health care professionals should ask about

prior adverse events in connection with a vaccination and about any conditions or circumstances that might indicate vaccination should be withheld or delayed. Health care professionals should refer to current Advisory Committee on Immunization Practices (ACIP) recommendations on valid and invalid contraindications as well as on valid indications for vaccine use (www.cdc.gov/nip).

Communicate Effectively with Patients

Standard 6: *Patients are educated about risks and benefits of vaccination in easy-to-understand language*

Health care professionals should discuss with the patient the benefits of vaccines, the diseases that they prevent, and any known risks from vaccines. These issues should be discussed in the patient's native language, whenever possible. Printed materials, accurately translated into the patient's language should be provided. For most commonly used vaccines, the U.S. Federal Government has developed Vaccine Information Statements for use by both public and private health care professionals to give to potential vaccine recipients. For vaccines covered by the National Childhood Vaccine Injury Act, including those vaccines used in children, these forms are required. These statements are available in English and other languages. Health care professionals should allot ample time with patients to review written materials and address questions and concerns. Information and assistance can be obtained by calling the Immunization Hotline (1-800-232-2522) or accessing the website (www.cdc.gov/nip).

Health care professionals should respect each patient's right to make an informed decision to accept or reject a vaccine or defer vaccination until more information is collected.

Administer and Document Vaccinations Properly

Standard 7: *Written vaccination protocols are available at all locations where vaccines are administered*

The medical protocol should detail procedures for vaccine storage and handling, vaccine schedules, contraindications, administration techniques, management and reporting of adverse events, and record maintenance and accessibility. These protocols should be consistent with established guidelines. CDC-recommended storage and handling procedures are available on the Internet at: www.gravity.lmi.org/lmi_cdc/geninfo.htm.

Health care professionals should promptly report all clinically significant adverse events following vaccination to the Vaccine Adverse Event Reporting System (VAERS), even if the health care professional does not believe that the vaccine caused the event.

Reporting is required for those vaccines given to adults and medical conditions covered by the National Childhood Vaccine Injury Act of 1986, as amended. Health care professionals should be aware that patients may report to VAERS, and that if they choose to do so, they are encouraged to seek the help of their health care professional. Report forms

and assistance are available by calling 1-800-822-7967 or on the Internet at www.fda.gov/cber/vaers/vaers.htm.

The National Vaccine Injury compensation Program (VICP) is a no-fault system that compensates persons of any age for injuries or conditions that may have been caused by a vaccine recommended by CDC for routine administration to children. Health care professionals should be aware of the VICP in order to address questions raised by patients. Information about the VICP is available on the internet at www.hrsa.gov/osp/vicp.htm or by calling 1-800-338-2382.

Since VAERS and VICP are separate programs, a report of an event to VAERS does not result in the submission of a compensation claim to VICP. Such a claim must be filed independently in the U.S. Court of Federal Claims. A brief description and contact information for both programs is provided on each Vaccine Information Statement for vaccines covered by the VICP.

Standard 8: *Persons who administer vaccines are properly trained*
All persons who administer vaccinations should be fully trained in vaccine storage and handling, vaccine schedules, contraindications, administration techniques, management and reporting of adverse events, and record maintenance and accessibility. Office staff should receive continuing education on these issues annually. With appropriate training, persons other than physicians and nurses can administer vaccines. Health care professionals should contact public health authorities or other medical authorities in their state for more information concerning which individuals are permitted to administer vaccines.

Standard 9: *Health care professionals recommend simultaneous administration of all indicated vaccine doses*
Administering indicated vaccines simultaneously is safe and effective. Simultaneous administration decreases the number of required visits and the potential for missed doses. Measles, mumps, and rubella (MMR) vaccine and tetanus and diphtheria (Td) toxoids should always be administered in their combined product. Giving influenza and pneumococcal vaccine at the same time (but in separate arms) is also safe and effective. Health care professionals should respect the choices of patients and their caregivers.

Standard 10: *Vaccination records for patients are accurate and easily accessible*
Patient vaccination histories should be recorded on a standard form in an easily accessible location in the medical record to facilitate rapid review of vaccination status. Accurate record keeping helps ensure that needed vaccinations are administered and unnecessary vaccinations are not administered. Records should indicate the vaccine, the date of administration, the vaccine manufacturer and lot number, the signature and title of the person administering the vaccine, and the address where the vaccine was administered. The medical record at the primary care provider's office, clinic or worksite should include all vaccinations received (such as those received at a specialist's office, influenza vaccination clinic, or pharmacy).

Record keeping may be paper-based or computerized. Computer systems make record maintenance, retrieval, and review easier.

Health care professionals should give patients a personal record of vaccinations they have received, including the dates and places of administration. Patients should be encouraged to bring their vaccination records to all medical visits.

Information and a modifiable template of these forms and records are available at www.ahcpr.gov/ppip/adultflow.pdf and are also available on CD-ROM and can be ordered on the internet: www.atpm.org/Immunization/whatworks.html

Standard 11: *All personnel who have contact with patients are appropriately immunized*
Health care professionals and other personnel (including first responders) who have contact with patients should be appropriately immunized (e.g., annual influenza vaccination, hepatitis B vaccination). Institutions should have policies to review and maintain the appropriate vaccination of staff and trainees.

ACIP recommendations for vaccinating health care workers are available on the Internet: www.cdc.gov/nip/publications/ACIP-list.htm

Implement Strategies to Improve Vaccination Rates

Standard 12: *Systems are developed and used to remind patients and health care professionals when vaccinations are due and to recall patients who are overdue*
Evidence shows that reminder/ recall systems improve adult vaccination rates. Systems may be designed to alert patients who are due (reminder) or overdue (recall) for specific vaccine doses or they may alert patients to contact their provider to determine if vaccinations are needed. Reminders or recalls can be mailed or communicated by telephone; an autodialer can be used to expedite telephone reminders. Patients who might be at high risk for not complying with medical recommendations may require more intensive follow-up.

Provider reminder/recall interventions inform those who administer vaccinations that individual patients are due or overdue for specific vaccinations. Reminders can be delivered in patient charts, by computer, and/or by mail or other means, and content of the reminders can be specific or general.

Information about these strategies and resources to assist in their implementation are available on CD-ROM and can be ordered on the internet: www.atpm.org/Immunization/whatworks.html. Model reminder recall templates are also available at www.ahcpr.gov/ppip/postcard.pdf

Standard 13: *Standing orders for vaccinations are employed*
Evidence shows that standing orders improve vaccination coverage among adults in a

variety of health care settings, including nursing homes, hospitals, clinics, doctor's offices, and other institutional settings. Standing orders enable non-physician personnel such as nurses and pharmacists to prescribe or deliver vaccinations by approved protocol without direct physician involvement at the time of the interaction. Standing orders overcome administrative barriers such as lack of physician personnel to order vaccines. Further, the Centers for Medicare and Medicaid allow standing order exemption from medicare rules www.cms.hhs.gov/medicaid/ltcsp/sc0302.pdf)

Information about this strategy and its implementation is available on CD-ROM and can be ordered on the internet: www.atpm.org/Immunization/whatworks.html

Standard 14: *Regular assessments of vaccination coverage rates are conducted in a provider's practice*
Evidence shows that assessment of vaccination coverage and provision of the results to the staff in a practice improves vaccination coverage among adults. Optimally, such assessments are performed annually. Provider assessment can be performed by the staff in the practice or by other organizations including state and local health departments. Effective interventions that include assessment and provision of results also may incorporate incentives or comparing performance to a goal or standard. This process is commonly referred to as AFIX (Assessment, Feedback, Incentives, and Exchange of Information). Coverage should be assessed regularly so that reasons for low coverage in the practice, or in a subgroup of the patients served, can be identified and interventions implemented to address them.

Information about this strategy and its implementation is available on CD-ROM and can be ordered on the internet: www.atpm.org/Immunization/whatworks.html

Software to assist in conducting coverage rate assessments and feedback is available at: www.cdc.gov/nip

Partner with the Community

Standard 15: *Patient-oriented and community-based approaches are used to reach target populations*
Vaccination services should be designed to meet the needs of the population served. For example, interventions that include community education, along with other components, such as extended hours, have been demonstrated to improve vaccination coverage among adults. Vaccination providers can work with partners in the community, including other health professionals (e.g., pharmacists), vaccination advocacy groups, managed care organizations, service organizations, manufacturers, and state and local health departments to determine community needs and develop vaccination services to address them.

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Endorsements

Advisory Committee on Immunization Practices

Albert B. Sabin Vaccine Institute

Ambulatory Pediatric Association

American Academy of Family Physicians

American Academy of Pediatrics

American Academy of Physician Assistants

American College of Emergency Physicians

American College of Osteopathic Pediatricians

American College of Preventive Medicine

American Medical Association

American Nurses Association

American Osteopathic Association

American Public Health Association

Association of Immunization Program Managers

Association of Maternal and Child Health Programs

Association of State and Territorial Health Officials

Center for Pediatric Research

Centers for Medicare and Medicaid Services

Council of State and Territorial Epidemiologists

Every Child by Two

Health Resources and Services Administration

Immunization Action Coalition

Infectious Diseases Society of America

National Alliance for Hispanic Health

National Asian Women's Health Organization

National Assembly on School-Based Health Care

National Association for City and County Health Officials

National Association for Pediatric Nurse Practitioners

National Association of School Nurses

National Coalition for Adult Immunization

National Foundation for Infectious Diseases

National Institute of Allergy and Infectious Diseases

National Medical Association

National Network of Immunization Nurses and Associates

National Partnership for Immunization

National Perinatal Association Partnership for Prevention

Pediatric Infectious Disease Society

Project Immunize Virginia

Society for Adolescent Medicine

Society for Teachers of Family Medicine

Vaccine Education Center at the Children's Hospital of Philadelphia

The National Vaccine Advisory Committee (NVAC)

Committee History

The National Vaccine Advisory Committee (NVAC) was chartered in 1988 to advise and make recommendations to the director of the National Vaccine Program and the assistant secretary for health, Department of Health and Human Services, on matters related to the prevention of infectious diseases through immunization and the prevention of adverse reactions to vaccines.

The NVAC is composed of 15 members from public and private organizations representing vaccine manufacturers, physicians, parents, and state and local health agencies. In addition, representatives from governmental agencies involved in health care or allied services serve as ex-officio members of the NVAC.

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10 Important Vaccine Facts for Seniors

1. Each year up to 60,000 adults, many aged 65 or older, die of infectious diseases that can be prevented, such as flu and pneumococcal infection.

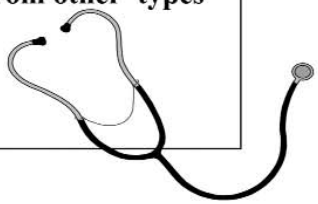
2. All people 65 years of age or older should get flu, pneumococcal, and tetanus/diphtheria vaccines. People in certain high-risk groups should get the hepatitis B vaccine.

3. Pneumonia and flu together are the 6TH LEADING CAUSE OF DEATH in the U.S. Most of these deaths occur in people aged 65 or older.

4. Pneumococcal pneumonia is one of the most common types of pneumonia. It often leads to hospitalization.

5. Pneumococcal vaccine can prevent up to 60% of serious pneumococcal infections, but it will not protect you from other types of pneumonia

6. You cannot get pneumonia from the vaccine.



7. Flu vaccine can prevent up to 70% of hospitalizations and 85% of deaths from flu-related pneumonia.

8. Since flu viruses change each year, people should get the new vaccine *each year, usually in the fall.*

9. You cannot get the flu from the vaccine. However, flu vaccine will not protect you from other lung infections, such as colds and bronchitis.

10. Because most cases of tetanus and diphtheria occur in adults, ALL adults should receive booster shots every 10 years. People who travel outside the U.S. should be evaluated for other vaccines that may be necessary.

This information was adapted from work by the Institute for Advanced Studies in Immunology and Aging and the World Health Organization in cooperation with the Centers for Disease Control and Prevention.

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CENTERS FOR DISEASE CONTROL AND PREVENTION

Special Communication

Adult Immunization

Summary of the National Vaccine Advisory Committee Report

David S. Fedson, MD, for the National Vaccine Advisory Committee

In January 1994 the National Vaccine Advisory Committee adopted a report that reviewed the status of adult immunization in the United States. Vaccine-preventable infections of adults represent a continuing cause of morbidity and mortality. Their major impact is among older persons. Effective and safe vaccines against these diseases are available, but they are poorly used. Several reasons account for low immunization levels among adults, including inadequate awareness by health care providers and the public of the importance and benefits of vaccination. Health care providers often fail to take advantage of opportunities to immunize adults during office, clinic, and hospital contacts and fail to organize programs in medical settings that ensure adults are offered the vaccines they need. Inadequate reimbursement for adult immunization by public and private health insurers and a lack of federal programs to support vaccine delivery are also major problems. The National Vaccine Advisory Committee's report includes five goals and 18 recommendations for improving adult immunization. To reach the Public Health Service adult immunization goals for the year 2000, the Committee recommends (1) improvements in public and provider education; (2) major changes in clinical practice; (3) increased financial support by public and private health insurers; (4) improved surveillance of vaccine-preventable diseases and vaccine production and delivery; and (5) support for research on vaccine-preventable diseases, new and improved vaccines, immunization practices, and international programs for adult immunization.

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IMMUNIZATION programs in the United States have dramatically reduced the occurrence of many childhood infectious diseases (Table 1).[1,2] Diphtheria and childhood tetanus have practically disappeared, and fatal cases of pertussis (whooping cough) are rare.[3] No cases of indigenous poliomyelitis have been reported since 1979.[4] The occurrence of measles has been substantially reduced.[5] Cases of childhood rubella are rarely observed, and there are few reports of congenital rubella syndrome.[6] Childhood mumps is seldom encountered by physicians.[7] The recent extraordinary decline in *Haemophilus influenzae* type b meningitis is largely attributable to widespread use of *Haemophilus influenzae* type b vaccines.[8] Nonetheless, the reemergence of measles during the period 1989 through 1991,[5] the persistence of congenital rubella syndrome,[6] and lingering questions about the safety of pertussis vaccine[9] are sobering reminders that control of vaccine-preventable childhood diseases requires constant vigilance. Our nation has responded with an unhesitating commitment of resources to expand our immunization efforts, most notably the president's Childhood Immunization Initiative.[10]

The contrast between the impact of vaccine-preventable diseases of adults compared with those of children is striking. Each year, fewer than 500 persons in the United States die of vaccine-preventable diseases of childhood. By comparison, 50 000 to 70 000 adults die of influenza, pneumococcal infections, and hepatitis B (Table 2).[11] In addition, many childhood vaccine-preventable infections are now found among young adults. Outbreaks of measles,[5,12] rubella,[13] and mumps[7,14] have caused major disruptions on college campuses, in the workplace, and in institutions such as hospitals and prisons. Vaccine-preventable diseases remain an important cause of costly hospitalization, especially among the elderly.[15]

Currently, 98% or more of American children are fully immunized by the time of school entry.[1] Although in some communities the proportion fully immunized by 2 years of age is much lower, several programs have been established to address this problem.[10] In contrast, and in spite of the much heavier burden of disease, vaccines that are recommended for adults are not widely used (Table 2).[11] Several reasons have been given to explain this. First, there is a limited perception on the part of both health care providers and the general public that adult vaccine-preventable diseases are significant health problems. Second, there are doubts in the minds of some health care providers and the public about the efficacy and safety of several of the vaccines used for adults. Third, adult immunization is selective not universal; different vaccines have different target groups (Table 3). Fourth, the sizes of the adult target populations for individual vaccines vary and for some vaccines are much larger than the target population for childhood vaccination. Fifth, unlike the childhood vaccination schedule that must be completed if children are to enter school, there are no statutory requirements for adult immunization. Sixth, unlike the child health care practices in most communities, there are few programs in either the public or private sectors for vaccinating adults. Finally, reimbursement for adult immunization has traditionally been neglected by both government and private insurers; children can usually obtain inexpensive or free vaccines from public health clinics, but until recently most adults have had to pay the full costs for most of their vaccines. The public availability of vaccines, school entry vaccination requirements, and responsible parenting have given our nation a high level of childhood immunization. In the best of circumstances, it would be difficult to achieve the same for adults.

In spite of these problems, adult immunization has not been ignored. More than 10 years ago two new vaccines for adults were licensed: pneumococcal vaccine in 1977 and hepatitis B vaccine in 1983. The 1980s brought many new initiatives to promote adult immunization, including those of the Advisory Committee on Immunization Practices,[16,17] the American College of Physicians,[18] the Infectious Diseases Society of America,[18] and the US Preventive Services Task Force.[19] In 1988 the Health Care Financing Administration (HCFA) launched its Medicare Influenza Vaccine Demonstration.[20] During the next 4 years, close to $69 million was spent in a multifaceted program to increase influenza vaccination among Medicare enrollees and to evaluate its cost-effectiveness and health benefits.

A complete list of committee members appears at the end of this article.

Reprint requests to National Vaccine Program Office, Rockwall II Bldg, Suite 1075, 5600 Fishers Ln, Rockville, MD 20852.

Table 1.—Reported Cases of Vaccine-Preventable Childhood Diseases in the United States*

Disease	Maximal No. of Cases (y)	1993 Cases†	Reduction, %
Diphtheria	206 939 (1921)	0	−100.0
Pertussis	265 269 (1934)	6132	−97.7
Tetanus‡	1560 (1923)	9	−99.4
Poliomyelitis (paralytic)	21 269 (1952)	0§	−100.0
Measles	894 134 (1941)	277	−99.9
Rubella‖	57 686 (1969)	188	−99.7
Congenital rubella syndrome	20 000 (1964-1965)	7	−99.9
Mumps¶	152 209 (1968)	1630	−98.9

*Data from the National Immunization Program, Centers for Disease Control and Prevention (CDC), Atlanta, Ga.
†Provisional data that may change because of late reporting.
‡Data from the CDC on tetanus refer to deaths not cases; CDC does not have information on the numbers of reported tetanus cases before 1947. The number of reported deaths refers to 1992. Mortality data for 1993 are not available. The provisional number of tetanus cases reported for 1993 is 42.
§Excludes an estimated four cases of vaccine-associated paralysis.
‖Rubella first became a reportable disease in 1966.
¶Mumps first became a reportable disease in 1968.

Table 2.—Estimated Effect of Full Use of Vaccines Currently Recommended for Adults*

Disease	Estimated Annual Deaths, No.	Estimated Vaccine Efficacy, %†	Current Vaccine Utilization, %‡	Additional Preventable Deaths per y, No.§
Influenza	20 000‖	70	41	8260
Pneumococcal infection	40 000	60	20	19 200
Hepatitis B	5000	90	10¶	4050
Tetanus-diphtheria	<25	99	40#	<15
Measles, mumps, and rubella	<30	95	Variable	<30
Travelers' diseases**	<10	...††	...	<10

*Adapted from Gardner and Schaffner.[11]
†Indicates efficacy in immunocompetent adults. Among elderly and immunocompromised patients, estimated efficacy may be lower.
‡The percentage of targeted groups who have been immunized according to current recommendations. Rates vary among different targeted groups. Data for influenza and pneumococcal vaccines were obtained from the 1991 National Health Interview Survey and apply to persons 65 years of age or older.
§Calculated as follows: (potential additional vaccine utilization)×(estimated vaccine efficacy)×(estimated annual deaths).
‖Variable (range, 0 to 40 000).
¶Highly variable (range, 1% to 60%) among different targeted groups.
#This estimate is based on seroprevalence data.
**Travelers' diseases include cholera, typhoid, Japanese encephalitis, yellow fever, poliomyelitis, and rabies.
††Ellipses indicate not applicable.

Discussion of how to improve adult immunization must be included in the debate over health system reform in the United States. Vaccine-preventable diseases of adults impose significant health care costs on the nation. Yet, there is strong evidence that adult immunization is highly cost-effective.[11,18] Thus, the choice we face is not simply deciding whether to pay for adult immunization, it is whether to pay more for the costs of treating unprevented illness or less for preventing it from occurring in the first place.

In January 1994 the National Vaccine Advisory Committee (NVAC) adopted a report that reviewed the status of adult immunization in the United States.[21] This article summarizes the NVAC report, including the committee's goals and recommendations (Table 4).

1. INCREASE THE DEMAND FOR ADULT VACCINATION BY IMPROVING PROVIDER AND PUBLIC AWARENESS

In 1980 the surgeon general recommended that by 1990 60% of all elderly and high-risk persons should be immunized with influenza and pneumococcal vaccines and 50% of target groups for new vaccines (eg, hepatitis B vaccine) should be vaccinated within 5 years of vaccine licensure.[22] In 1990 these goals had not been reached.

Surveys conducted during the 1980s showed that physicians generally understood the importance of vaccine-preventable diseases and knew about the efficacy and safety of vaccines recommended for adults. However, they often failed to translate their knowledge into clinical practice.[23] Several studies demonstrated that good administration and organization were the keys to the success of vaccination programs.[23] Although specific details varied, for each successful program a decision had been made to establish an organized approach for offering vaccines to adults on a regular basis.

Better public understanding of the seriousness of vaccine-preventable diseases and the benefits of vaccination is essential.[16,18] Many elderly patients fail to appreciate that influenza presents a risk of severe illness that may lead to hospital admission or death.[23] Most elderly patients have no knowledge of the frequency or severity of pneumococcal infections. Few young adults who have multiple sexual partners understand their risks for acquiring hepatitis B. Many adults are unaware of the clinical effectiveness and safety of the vaccines that can prevent these diseases. Educational programs can help increase public understanding of the need for and benefits of adult immunization. This was illustrated recently during the HCFA Medicare Influenza Vaccine Demonstration, when a letter sent to Medicare enrollees by the HCFA administrator was helpful in persuading older persons to get vaccinated.[24]

The NVAC recommends that educational programs be undertaken to improve the adult immunization practices of physicians and other health care providers. These programs should emphasize widespread dissemination of the goals and recommendations for adult immunization, periodic assessment of provider knowledge and attitudes about vaccines and immunization practices, and better understanding of the administrative and organizational features of successful vaccination programs. Greater emphasis should be given to adult immunization in professional education and certification, and more attention should be devoted to practical approaches for vaccine delivery in training programs, including appropriate immunization of students and trainees themselves. The committee recommends that the public also be better informed of the importance of vaccine-preventable diseases of adults and of the safety and benefits of immunization. This will require an understanding of factors that constitute barriers or promote easy access to vaccination services. The committee recommends educational programs and media campaigns for adult immunization, especially those that are linked to announcements routinely directed to target populations by government agencies and community organizations.

2. ASSURE THAT THE HEALTH CARE SYSTEM HAS AN ADEQUATE CAPACITY TO DELIVER VACCINES TO ADULTS

An efficacious vaccine will be effective in preventing disease only if it is given to those who will benefit. The importance of vaccine delivery has been dramatically demonstrated by the contributions of the Centers for Disease Control and Prevention (CDC) to childhood immunization. Approximately half of all children in the United States are immunized through state and local public health programs that use vaccines purchased under federal contracts negotiated by the CDC.[1] Studies by CDC investigators on the epidemiology of vaccine-preventable diseases, the susceptibility of children to infection, and the shortcomings of vaccine delivery pro-

Table 3.—Vaccines and Toxoids Recommended for All Adults*

Age Group, y	Influenza (Annually)	Pneumococcal	Measles	Rubella	Mumps	Td†
18-24	...	...	X	X	X	X
25-64	...	...	X‡	X	X§	X
≥65	X	X	...	...	...	X

*Adapted from Centers for Disease Control.[18] This report should be consulted for detailed recommendations on immunizing adults who have high-risk medical conditions; who are immunocompromised; who have special occupations, lifestyles, or environmental circumstances; or who are travelers, foreign students, immigrants, or refugees. Ellipses indicate vaccine or toxoid not universally recommended for all adults.

†Tetanus and diphtheria toxoids adsorbed (for adult use).

‡One dose of measles vaccine is indicated for persons born after 1956. A second dose is indicated for persons born after 1956 who are entering health care employment, those who are students in postsecondary educational institutions, and those who are planning international travel.

§Indicated for persons born after 1956.

grams provide the basis for the Childhood Immunization Initiative.[10] This research has shown that the majority of children and adults who develop vaccine-preventable illnesses have been seen previously by health care providers and could have been vaccinated at the time but were not.[25] Such "missed opportunities" for vaccination have several causes, including misconceptions about contraindications to vaccination and the lack of an organized approach to offering vaccines. The failure to prevent vaccine-preventable diseases is far more often due to the failure to vaccinate rather than to the failure of the vaccines themselves. The costs of these "missed opportunities" are very high.

Most vaccines given to adults are administered by generalist physicians, yet wide variations have been shown in their immunization practices.[18,23] Many adults who should be vaccinated receive their principal care from specialists rather than general physicians or from highly specialized teams of health care professionals or administrative units such as clinics. In such settings, a single focus of responsibility for offering vaccines is often difficult to identify. Thus, efforts to improve adult immunization must focus on developing workable systems for regularly offering vaccines to patients at risk, regardless of where they receive their care. Such systems should reflect practice guidelines, and their evaluation should become a common feature of quality assurance and accreditation programs.

The NVAC recommends that the CDC and other federal agencies assume increased responsibility for assuring that adults are appropriately immunized. This will require support for vaccine purchase and program administration at the state and local levels, as well as increased staff and support at the CDC itself. The committee urges that all health care providers, whether generalists or specialists, consider any contact with adult patients as an opportunity to provide recommended vaccines. The committee recommends that health care providers and the institutions in which they practice adopt administrative and organizational arrangements that guarantee the regular offering of vaccines to adults, develop and implement standards and practice guidelines for adult immunization, and include regular evaluation of immunization practices as part of their quality assurance programs.

3. ASSURE ADEQUATE FINANCING MECHANISMS TO SUPPORT THE EXPANDED DELIVERY OF VACCINES TO ADULTS

Childhood immunization programs have long received financial support from federal, state, and local governments. Public agencies have been much less involved with adult immunization; in 1991 less than 10% of all doses of influenza and pneumococcal vaccines used in the United States were given by state and local health departments (CDC, unpublished data, 1993). To address this problem, in 1981 the Congress instructed the HCFA to pay physicians for pneumococcal vaccination of elderly patients under Part B of the Medicare program.[23] In 1984 reimbursement for hepatitis B vaccination was added for Medicare patients with end-stage renal disease. In 1993 Medicare was authorized to pay for influenza vaccine and its administration.[21]

The implementation of Medicare reimbursement for vaccination has not measured up to its promise. For example, Medicare reimbursement for pneumococcal vaccination during the 1980s barely covered the cost of the vaccine alone.[23] Each year during the period 1985 through 1988, only 300 000 to 400 000 doses of pneumococcal vaccine—25% of all doses distributed nationwide—could be accounted for by the Medicare reimbursement program. Whether adequate reimbursement is important for adult immunization should become apparent in Medicare's recently established program to pay for annual influenza vaccination.

There is little information on the extent to which private health insurance companies provide coverage for adult immunization. Health maintenance organizations may provide such services, but their immunization rates are often no better than those of patients covered by traditional health insurance.[26] Reliance on regulatory approaches to improve private health insurance coverage of adult immunization may not be sufficient; businesses that self-insure their employees are not subject to regulation by state governments. Proposals for health system reform usually include coverage of childhood immunization. Similar coverage is needed for adult immunization.

The NVAC recommends that publicly funded health insurance programs adequately reimburse providers for the costs of vaccines and their administration to adults. Medicare and Medicaid reimbursement policies must be monitored to ensure that they are effectively implemented by fiscal intermediaries and providers alike. When problems are identified, technical assistance must be provided and financial or other incentives considered so that adults enrolled in these programs are appropriately immunized. Similarly, the committee recommends that private health insurance companies adequately reimburse providers for adult immunization, without requiring individual co-payments or deductibles. Business and labor leaders and state health insurance regulators should encourage inclusion of adult immunization as a cov-

Table 4.—The National Vaccine Advisory Committee's Goals and Recommendations for Adult Immunization*

1. Increase the demand for adult vaccination by improving provider and public awareness
   - Conduct effective information programs for
     - Health care providers to improve their immunization practices
     - The public to emphasize the importance of vaccine-preventable diseases and the safety and benefits of immunization
2. Assure the health care system has an adequate capacity to deliver vaccines to adults
   - Establish an adult immunization grant program to assist state and local health departments
   - Reduce missed opportunities for vaccination
   - Appropriately vaccinate adult patients in
     - Primary care settings
     - Specialty practices and institutions
   - Implement guidelines and standards for adult immunization practice
3. Assure adequate financial mechanisms to support the expanded provision of vaccines to adults
   - Adequately reimburse providers through
     - Publicly funded programs such as Medicare and Medicaid
     - Private health insurance
   - Include coverage for adult immunization in national health system reform
4. Monitor and improve the performance of the nation's vaccine delivery system
   - Expand programs for disease surveillance
   - Preserve and strengthen vaccine-manufacturing capacity to meet the nation's needs
   - Endeavor to achieve the adult immunization goals of *Healthy People 2000*
5. Assure adequate support for research
   - Support research on
     - Adult vaccine-preventable diseases
     - Efficacy, safety, clinical effectiveness, and cost-benefit/cost-effectiveness of adult immunization
     - Epidemiology of adult immunization practices
     - New and improved vaccines
     - International programs for adult immunization

*From National Vaccine Advisory Committee.[21]

ered benefit for those insured. Finally, the committee strongly recommends that all national health system reform proposals include coverage for adult immunization services and provide mechanisms to finance their delivery.

4. MONITOR AND IMPROVE THE PERFORMANCE OF THE NATION'S VACCINE DELIVERY SYSTEM

The nation's ability to control vaccine-preventable diseases requires continuing surveillance of the diseases themselves, an assured manufacturing capacity to provide the vaccines needed, and periodic assessment of whether the vaccines are reaching the persons for whom they are intended.

The effective and efficient use of vaccines in adults depends on a clear understanding of which diseases are epidemiologically important and which persons are at risk of infection. The CDC works closely with state and local health departments to monitor the occurrence of vaccine-preventable diseases. For example, it regularly provides timely advice on the identity of influenza viruses causing outbreaks and information on whether the current influenza vaccine should be protective.[27] Surveillance by the CDC has provided better understanding of the epidemiology of hepatitis B[28] and pneumococcal infections.[29] These programs could be improved if inexpensive methods were developed for more rapid diagnosis of disease. Surveillance is also essential for accurately assessing the economic impact of vaccine-preventable diseases.

The success of our nation's immunization programs depends on the capacity of our vaccine manufacturers to produce and distribute a constant supply of vaccine products. During the swine influenza program in 1976, our system for vaccine supply was severely tested.[30] In the 1980s liability costs contributed to the rise in prices for childhood vaccines and seriously threatened the economic viability of vaccine manufacturers.[31] The National Vaccine Injury Compensation Program, established in 1986, provides a mechanism by which claims for childhood vaccine-associated injuries can now be settled.[32] Although its implementation has been costly and not without problems, the program has succeeded in stabilizing the market for the vaccine manufacturers.

One reason why the 1990 goals for adult immunization were not reached may be the failure to monitor adult immunization practices. In 1989 the National Center for Health Statistics began to gather better information on vaccination levels against influenza, pneumococcal disease, tetanus, and diphtheria. Its National Health Interview Survey has shown, for example, that only 20% of elderly persons have ever received pneumococcal vaccine.[33] However, little is known about geographic variations in the use of this vaccine or about vaccination rates in persons at increased risk of disease. For hepatitis B vaccine, a great deal is known about vaccination status of health care workers, but almost nothing is known about the status of the other high-risk groups that account for more than 95% of all cases of the disease.[28]

The NVAC recommends that surveillance of vaccine-preventable diseases by the CDC and by state and local health agencies be strengthened, including the development of better methods of diagnosing disease. The committee recommends that the capacity of the nation's vaccine manufacturers to meet current and future needs for vaccines be periodically assessed to identify potential technical, regulatory, financial, legal, or political problems that could threaten adequate supplies of vaccines for adult immunization. This assessment should also determine the appropriate level of federal involvement in vaccine purchase, production, and compensation for vaccine-related adverse events. To reach the adult immunization goals of *Healthy People 2000*, the committee recommends more detailed evaluation of vaccination levels in adults with specific high-risk conditions and in specific population groups at risk. It also recommends support for programs to improve vaccine delivery where immunization rates are found to be unsatisfactory. (The adult immunization goals of *Healthy People 2000* provide for increases in immunization levels as follows: (1) pneumococcal pneumonia and influenza immunization among institutionalized chronically ill or older people to at least 80%; (2) pneumococcal pneumonia and influenza immunization among noninstitutionalized, high-risk populations as defined by the Advisory Committee on Immunization Practices to at least 60%; and (3) hepatitis B immunization among high-risk populations, including infants or surface antigen–positive mothers, to at least 90%; occupationally exposed workers to at least 90%; intravenous-drug users in drug treatment programs to at least 50%; and homosexual men to at least 50%.)

5. ASSURE ADEQUATE SUPPORT FOR RESEARCH

Basic research on the viruses and bacteria that cause disease is essential if we are to develop new and improved vaccines.[34] Equally important is research on host responses to infection and vaccination, especially the responses of older adults whose immune systems become less responsive with advancing age. For each vaccine, initial evaluation of its efficacy must be followed by an assessment of its clinical effectiveness in preventing the more serious and costly outcomes of disease. In addition, much more needs to be known about the health and economic consequences of vaccine-preventable diseases. The cost-effectiveness of adult immunization must be further assessed; current evidence suggests that influenza and pneumococcal vaccination are highly cost-effective when compared with other preventive, screening, and treatment interventions in common use among elderly persons.[23] New knowledge about the epidemiology of vaccine-preventable diseases must be accompanied by research on the epidemiology of efforts to prevent these diseases, including variations in the vaccination practices of health care providers. The importance of this research is illustrated by a recent study showing that persons at greatest risk of influenza were least likely to be vaccinated.[23]

Research has provided several new and improved vaccines that may benefit adults, including cold-adapted live influenza, pneumococcal conjugate, varicella-zoster, hepatitis A, and acellular pertussis vaccines.[18,34] Promising new methods of vaccine administration are being developed, including newer adjuvants, epitope-based strategies that reflect an understanding of antigen recognition sites, particulate antigens delivered as microcapsules, glycoconjugate preparations, immunologic boosting with cytokines and lymphokines, and the use of vaccine vectors.

Whether adults in the United States are to be protected against vaccine-preventable diseases will depend to some extent on the occurrence of these diseases in other parts of the world. Current international programs for monitoring diseases such as influenza need to be supplemented by surveillance programs for other emerging and reemerging infectious diseases, such as diphtheria in countries of the former Soviet Union,[35] a new strain of *Vibrio cholerae* in South Asia,[36] and the spread of antimicrobial-resistant *Streptococcus pneumoniae* in many countries.[37] International disease surveillance and vaccination programs have already paid rich dividends in the worldwide eradication of smallpox and the elimination of poliomyelitis in the Americas. Given the promise of new and improved vaccines, the Children's Vaccine Initiative has become the organizing focus to coordinate the transfer of new technologies for vaccine production and vaccine delivery to developing countries.[38] Many aspects of this program have direct implications for the development of new and improved vaccines for adults.

The NVAC recommends continued support of research on the microbiologi-

cal agents of and the host response to vaccine-preventable infections, including those of immunocompromised and aging individuals. The committee urges the development of better measures of the health and economic consequences of current and future vaccine-preventable diseases. The committee recognizes that the viability of our nation's adult immunization programs requires continued evidence of the efficacy, effectiveness, safety, and cost-effectiveness of current and future vaccines. The committee recommends greater attention be given to studies of the epidemiology of immunization practices. Research on new and improved vaccines for use in the United States and internationally must be assured stable and continuing support. Finally, the committee encourages greater collaboration between federal agencies, nongovernmental organizations, professional associations, and vaccine companies in the United States and their counterparts in international organizations and in countries throughout the world.

CONCLUSION

In making its recommendations, the NVAC recognizes that none of its goals for adult immunization will be reached without giving attention to all. The task is complex and the effort and resources needed to achieve success will be substantial. However, in undertaking this work, the committee is reminded that our nation's programs for childhood immunization have reduced the costs of health care and improved the well-being of all our children. We can and should expect no less from our efforts to immunize adults.

The National Vaccine Program was established in 1986 by the Public Health Service Act to achieve optimal prevention of infectious disease through immunization and optimal prevention of adverse reactions to vaccines. The program is responsible for coordination and direction of government and nongovernment activities on research, licensing, production, distribution, and use of vaccines. The director is the assistant secretary for health, with the National Vaccine Advisory Committee serving as advisor. The committee consists of 15 voting members appointed by the director, in consultation with the National Academy of Sciences, including individuals in vaccine research or manufacture, physicians, members of parent organizations, and representatives of health agencies and public health organizations. The committee also includes five nonvoting members from the National Institutes of Health, the Food and Drug Administration, the Centers for Disease Control and Prevention, the Agency for International Development, and the Department of Defense.

Members of the National Vaccine Advisory Committee are as follows:

Vincent A. Fulginiti, MD (*Chair*), University of Colorado Health Science Center, Denver; Barry R. Bloom, PhD, Albert Einstein College of Medicine, Bronx, NY; Judy Braiman, Empire State Consumer Association, Rochester, NY; Betty F. Bumpers, Every Child By Two, Washington, DC; Robert B. Couch, MD, Baylor College of Medicine, Houston, Tex; R. Gordon Douglas, Jr, MD, Merck & Co Inc, Whitehouse Station, NJ; David S. Fedson, MD, University of Virginia Medical Center, Charlottesville; Charles M. Helms, MD, PhD, University of Iowa, Iowa City; Paul P. Hung, PhD, Wyeth-Ayerst Laboratories, Philadelphia, Pa; Kay Johnson, The March of Dimes, Washington, DC; David T. Karzon, MD, Vanderbilt University School of Medicine, Nashville, Tenn; Susan M. Lett, MD, MPH, Massachusetts Department of Public Health, Jamaica Plain; Robert K. Ross, MD, Department of Health Services, San Diego, Calif; Daniel W. Shea, MD, DePere, Wis; Sylvia F. Villarreal, MD, University of California–San Francisco.

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Vaccinations for Adults

You're **NEVER** too old to get shots!

Many adults don't know they are supposed to get immunized against diseases. They think vaccinations are for kids. There are millions of adults in this country who need influenza, pneumococcal, tetanus, diphtheria, hepatitis B, and other vaccines. Are you one of them?

Getting immunized is a lifelong, life-protecting job. Make sure you and your health professional keep your vaccinations up to date! Don't leave your doctor's office without making sure that you've had all the vaccinations you need.

Influenza "flu shot"	The "flu shot" is recommended every fall for people age 50 or older; women who will be in their 2nd or 3rd trimester of pregnancy during flu season; residents of long-term care facilities; people younger than 50 who have medical problems such as heart or lung disease (including asthma), diabetes, kidney disease, or an immune system weakened by disease or medication; and those who work with or live with any of these individuals.			
Pneumococcal "pneumococcal shot"	The "pneumococcal shot" is recommended one time at age 65 (or older if it was not given at 65). This shot is also recommended for people younger than 65 who have certain chronic illnesses. Some individuals with particular health risks will need a one-time revaccination dose 5 years later. Consult your doctor.			
Tetanus, diphtheria (Td) often referred to as "tetanus shot"	If you haven't had at least 3 basic tetanus-diphtheria shots in your lifetime, you need to complete the series listed below:			And then all adults need a booster dose every 10 years.
	dose #1 now	dose #2 1 month later	dose #3 6 months after dose #2	
Hepatitis A (Hep A) for those at risk*†	Hepatitis A vaccine is recommended for many adults, including travelers to certain areas outside the U.S.*			
	dose #1 now		dose #2 is usually given 6 months after dose #1	
Hepatitis B (Hep B) for those at risk*†	dose #1 now	dose #2 1 month later	dose #3 is usually given 5 months after dose #2	
Measles, mumps, rubella (MMR)	One dose is recommended for those born in 1957 or later if that person has not been previously vaccinated. (A second dose of MMR may be required in some work or school settings, or recommended for international travel.) People born before 1957 are usually considered immune.			
Varicella (Var)	This vaccine is recommended for those who have never had chickenpox.			
	dose #1 now		dose #2 1–2 months later	
Meningococcal for those at risk*	If you are a young adult going to college, ask your doctor about your risk of meningococcal disease and your need for vaccination.			

* Consult your health professional to determine your level of risk for infection and your need for this vaccine.

† If you need both hepatitis A and B vaccines, a combination product is available which is given on a 3-dose schedule. Consult your health professional.

Do you travel outside the United States? If so, you may need additional vaccines, as well as hepatitis A. The Centers for Disease Control and Prevention (CDC) operates an international traveler's immunization hot line. Call (877) 394-8747 or visit CDC's website at www.cdc.gov/travel to obtain information about required and/or recommended shots for your destination. You may also consult a travel clinic or your physician.

Item #P4030 (06/02)

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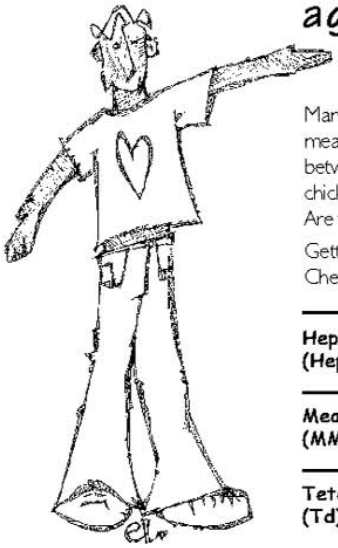

Are you 11–19 years old?

Then you need to be vaccinated against these serious diseases!

Many people between the ages of 11 and 19 think they are done getting immunized against diseases like measles and tetanus. They think shots are just for little kids. But guess what? There are millions of people between the ages of 11 and 19 who need vaccinations to prevent tetanus, diphtheria, hepatitis B, hepatitis A, chickenpox, measles, mumps, rubella, influenza, pneumococcal disease, and/or meningococcal disease. Are you one of them?

Getting immunized is a lifelong, life-protecting job. Make sure you and your doctor or nurse keep it up. Check to be sure you've had all the shots you need.

Hepatitis B (Hep B)	You need three doses of hepatitis B vaccine if you have not already received them.
Measles, Mumps, Rubella (MMR)	Check with your doctor or nurse to make sure you've had your second dose of MMR.
Tetanus, diphtheria (Td) ("tetanus shot")	You need a booster dose of Td after your 11th birthday (if it has been five years or more since your last dose). After that you will need a Td every ten years. A Td is not just something you get when you step on a nail!
Varicella (Var) ("chickenpox shot")	If you have not been previously vaccinated and have not had chickenpox, you should get vaccinated against this disease. Children 12 years of age and under need one dose. Teens 13 years of age and older need two doses.
Hepatitis A (Hep A)	Many teens need protection from hepatitis A. Do you travel outside the United States?* Do you live in a community with a high rate of hepatitis A? Are you a male who has sex with other males? Do you inject drugs? Do you have a clotting factor disorder or chronic hepatitis? Talk to your doctor or nurse regarding your risk factors.
Influenza vaccine ("flu shot")	Do you have a chronic health problem such as asthma, diabetes, heart disease, etc.? Flu shots are especially recommended every fall for people with chronic diseases, although anyone who wants to avoid getting the flu can get a shot.
Pneumococcal vaccine ("pneumococcal shot")	Do you have a chronic health problem? Talk to your doctor or nurse about whether you should receive a "pneumococcal shot."
Meningococcal disease	Going to college? If so, make sure you ask your doctor or nurse about your risk for life-threatening meningococcal disease. You may want to get the vaccine that prevents it.

*** Do you travel outside the United States?**

If so, you may need additional vaccines, including hepatitis A vaccine. Consult your doctor, nurse, or local health department about recommended and/or required vaccines for your destination.

www.immunize.org/catg.d/11teens8.pdf • Item # P4020 (9/02)

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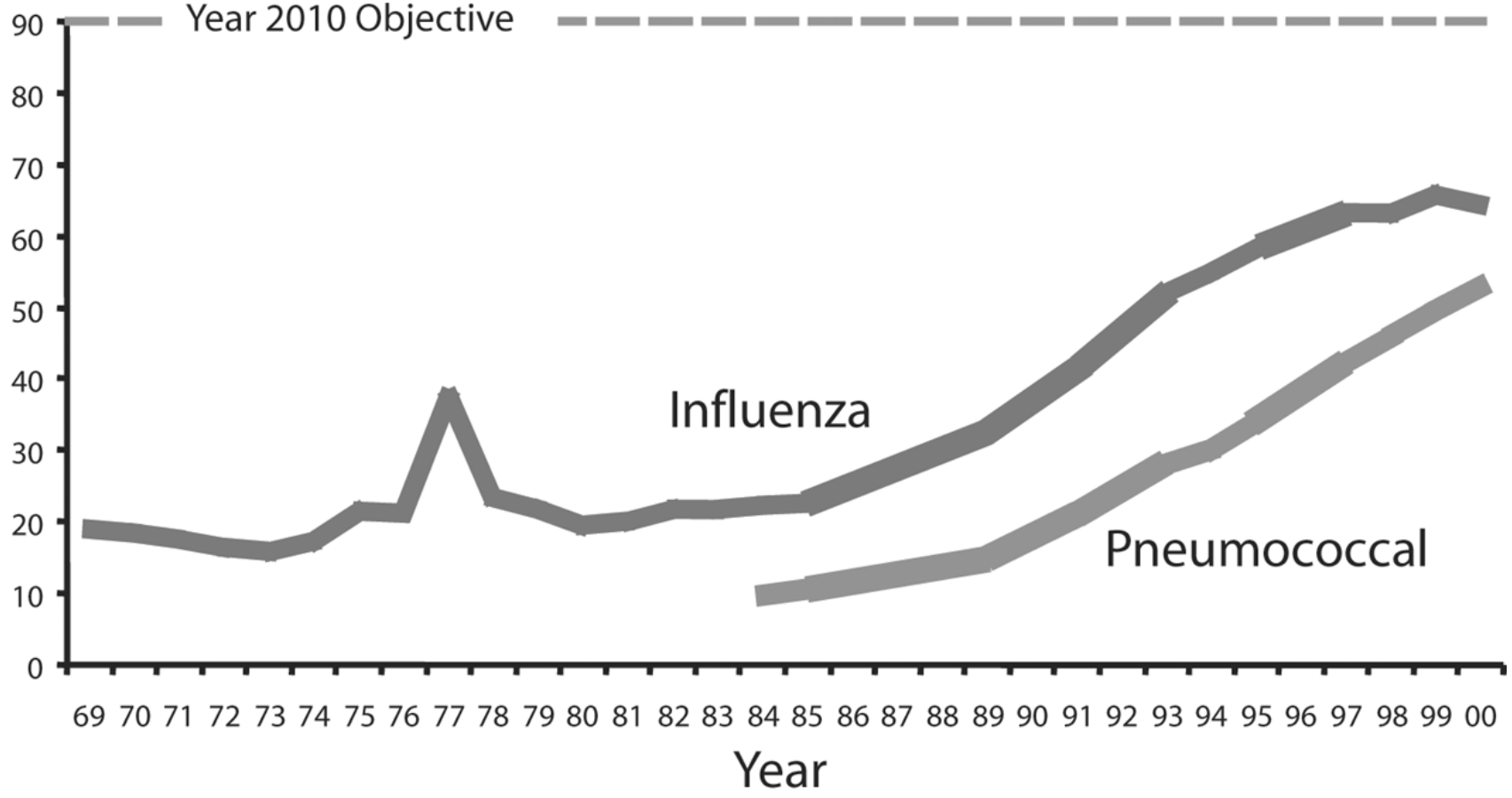
TABLE 2. Percentage of persons aged ≥65 years who reported receiving influenza vaccine during the preceding year or pneumococcal vaccine ever, by reporting area — Behavioral Risk Factor Surveillance System (BRFSS), United States, 2001

	Influenza			Pneumococcal		
Reporting area	%	(95% CI*)	% point difference 1999 to 2001	%	(95% CI)	% point difference 1999 to 2001
Alabama	65.9	(61.6–70.2)	1.3	60.3	(55.8–64.8)	6.4
Alaska	62.8	(54.0–71.4)	3.0	65.3	(56.8–74.0)	21.6
Arizona	61.8	(56.8–66.8)	–9.5	65.6	(60.8–70.6)	12.2
Arkansas	63.2	(59.0–67.4)	–4.0	59.0	(54.6–63.4)	8.9
California	68.9	(64.6–73.4)	–3.3	59.6	(55.0–64.2)	2.6
Colorado	77.4	(72.0–82.6)	2.6	68.6	(62.6–74.6)	5.9
Connecticut	69.1	(66.2–71.8)	4.3	63.3	(60.4–66.2)	14.3
Delaware	67.6	(63.6–71.8)	–0.1	68.9	(64.8–73.2)	2.4
District of Columbia	55.5	(49.0–62.0)	–0.4	49.0	(42.4–55.6)	13.7
Florida	54.9	(51.6–58.2)	–8.4	58.1	(54.8–61.4)	4.5
Georgia	62.2	(58.0–66.6)	5.3	57.9	(53.4–62.4)	8.2
Guam	39.5	(25.6–53.4)	NA†	33.1	(19.4–46.6)	NA†
Hawaii	79.0	(75.4–82.4)	4.9	63.7	(59.2–68.2)	7.9
Idaho	65.1	(61.6–68.6)	–3.9	60.3	(56.6–64.0)	5.1
Illinois	62.2	(57.0–67.4)	–5.3	56.7	(51.2–62.0)	9.3
Indiana	65.7	(62.0–69.4)	–0.4	60.2	(56.4–64.2)	8.6
Iowa	72.8	(69.4–76.2)	3.2	65.9	(62.2–69.6)	4.6
Kansas	68.5	(65.2–71.8)	1.5	62.9	(59.4–66.4)	7.8
Kentucky	60.9	(57.4–64.4)	–7.4	55.1	(51.6–58.6)	3.1
Louisiana	56.1	(52.4–59.8)	–4.3	49.5	(45.8–53.2)	9.1
Maine	71.5	(67.2–75.8)	–2.2	65.0	(60.4–69.6)	7.7
Maryland	67.3	(63.0–71.6)	4.7	62.3	(57.8–66.8)	8.1
Massachusetts	70.6	(68.0–73.4)	1.3	63.5	(60.6–66.4)	6.8
Michigan	60.4	(56.4–64.6)	–9.6	56.6	(52.2–60.8)	–1.2
Minnesota	70.1	(66.6–73.6)	6.1	62.9	(59.2–66.6)	11.0
Mississippi	61.8	(57.4–66.2)	–1.0	55.7	(51.2–60.2)	5.3
Missouri	67.5	(63.2–71.6)	–0.9	56.0	(51.6–60.4)	3.2
Montana	73.1	(69.0–77.2)	0.2	67.9	(63.4–72.2)	6.7
Nebraska	70.1	(66.6–73.6)	0.9	61.2	(57.4–65.0)	6.3
Nevada	63.3	(57.2–69.4)	1.2	66.3	(60.2–72.6)	4.6
New Hampshire	69.4	(65.6–73.2)	4.3	62.7	(58.6–66.6)	2.3
New Jersey	64.5	(61.0–68.0)	–0.9	58.9	(55.2–62.6)	3.9
New Mexico	70.0	(66.4–73.6)	1.2	62.7	(58.8–66.6)	9.5
New York	62.5	(58.0–67.0)	–1.3	55.9	(51.2–60.6)	5.9
North Carolina	66.1	(62.2–70.0)	1.9	65.8	(61.8–69.6)	7.2
North Dakota	70.0	(65.4–74.6)	2.8	64.2	(59.4–69.0)	9.1
Ohio	63.4	(59.0–67.8)	–5.4	59.3	(54.8–63.8)	4.4
Oklahoma	72.7	(69.2–76.2)	0.8	66.1	(62.4–69.8)	12.4
Oregon	71.7	(67.4–76.0)	6.5	70.9	(66.4–75.2)	14.6
Pennsylvania	63.8	(60.0–67.4)	0.7	59.5	(55.6–63.2)	7.2
Puerto Rico	36.8	(32.6–41.0)	–3.5	24.1	(20.2–28.0)	2.3
Rhode Island	72.6	(69.0–76.2)	–3.2	67.0	(63.2–70.8)	10.1
South Carolina	66.2	(61.8–70.6)	–3.8	57.9	(53.2–62.6)	1.8
South Dakota	74.1	(71.4–76.6)	0.4	59.2	(56.2–62.2)	8.8
Tennessee	65.6	(61.0–70.2)	0.1	55.4	(50.6–60.2)	1.1
Texas	61.8	(58.6–65.0)	–8.1	58.0	(54.6–61.4)	2.2
Utah	68.7	(63.2–74.0)	–6.5	67.3	(62.4–72.4)	6.0
Vermont	71.5	(68.0–75.2)	–1.9	67.3	(63.4–71.2)	10.8
Virgin Islands	38.7	(31.4–46.0)	NA†	30.7	(23.8–37.6)	NA†
Virginia	65.3	(60.6–70.0)	–0.4	60.1	(55.2–65.0)	4.9
Washington	72.5	(69.0–76.0)	3.6	66.8	(63.0–70.6)	10.9
West Virginia	61.7	(57.8–65.4)	–1.2	61.3	(57.6–65.2)	7.0
Wisconsin	70.4	(66.2–74.6)	5.5	65.6	(61.0–70.0)	11.9
Wyoming	69.6	(65.4–73.8)	–4.2	68.4	(64.0–72.8)	6.9
Total	**64.9**	**(64.0–65.8)**	**–2.0**	**60.0**	**(59.2–60.8)**	**5.9**

* Confidence interval.
† Not available. Guam and Virgin Islands did not participate in the 1999 BRFSS.

Influenza and Pneumococcal Vaccine Coverage, Persons Aged 65 Years or Older, United States, 1969-2000



U.S. Immunization Survey 1969-1985; National Health Interview Survey 1989-2000

APPENDIX D

Vaccine Names, Storage & Handling, and Manufacturers

CDC Vaccine Price List (November 21, 2003)

Vaccine	Brandname/ Tradename	Packaging	CDC Cost/Dose	Private Sector Cost/Doses	Contract End Date	Manufacturer
DTaP√	Tripedia® DAPTACEL®	10 x 1 dose vial 10 x 1 dose vial	$11.75 $12.75	$21.40 $22.04	3/31/04 3/31/04	Aventis Pasteur
DTaP√	Infanrix®	10 x 1 dose vial 5 x 1 dose TIP-LOK syringe	$12.75 $12.75	$19.65	3/31/04 3/31/04	GlaxoSmithKline
DTaP-Hep B-IPV♪	Pediarix®	10 x 1 dose vial 5 x 1 dose syringe	$32.75 $32.75	$69.41 $69.41	3/31/04 3/31/04	GlaxoSmithKline
DTaP-Hib #	TriHIBit®	5 x 1 dose vials	$23.40	$41.72	3/31/04	Aventis Pateur
e-IPV▲	IPOL®	10 dose vial	$9.96	$21.80	3/31/04	Aventis Pasteur
Hepatitis B-Hib^	COMVAX®	10 x 1 dose vials	$21.83	$43.56	3/31/04	Merck
Hepatitis A Pediatric	VAQTA®	10 x 1 dose vial	$11.15	$29.62	3/31/04	Merck
Hepatitis A Pediatric	Havrix®	1 dose vial 10 x 1 dose vial 5 x 1 T-L Syr No Needle 25 x 1 T-L Syr No Needle	$11.15 $11.15 $11.15 $11.15	$26.14	3/31/04	GlaxoSmithKline
Hepatitis A Adult	VAQTA®	10 x 1 dose vials 1 dose vial	$17.75	$59.24 $62.76	6/30/04	Merck
Hepatitis A Adult	Havrix®	1 dose TIP-LOK 5 x 1 dose TIP-LOK	$17.75 $17.75	$52.40	6/30/04	GlaxoSmithKline
Hepatitis A-Hepatitis B Adult▲	Twinrix®	10 x 1 dose vial 5 x 1 dose Syr, No Needles	$36.16 $36.16	$78.41	6/30/04	GlaxoSmithKline
Hepatitis A-Hepatitis B 18 only▲	Twinrix®	Single dose vial	$36.16	$78.67	3/31/04	GlaxoSmithKline
Hepatitis B▲ Pediatric/Adolescent	ENGERIX B®	1 dose vial 10 x 1 dose vials 5 x1 T-L Syr No Needle 25x1 T-L Syr No Needle 25 x1 T-L Syr 5/8" Needle	$9.00 $9.00 $9.00 $9.00 $9.00	$21.37	3/31/04	GlaxoSmithKline
Hepatitis B▲ Pediatric/Adolescent	RECOMBIVAX HB®	10 x 1 dose vial	$9.00	$23.20	3/31/04	Merck
Hepatitis B 2 dose▲ ¤Adolescent (11-15)	RECOMBIVAX HB®	10 x 1 dose vials	$24.25	$59.09	3/31/04	Merck
Hepatitis B-Adult▲	RECOMBIVAX HB®	10 x 1 dose vials 1 x 1 dose vial	$24.23 $24.23	$59.09 $59.09	6/30/04	Merck
Hepatitis B-Adult▲	ENGERIX-B®	1 x 1 dose vial 5 x 1 dose Tiplok 25 x 1 dose Tiplok	$24.23 $24.25 $24.25	$48.65	6/30/04	GlaxoSmithKline
Hib▲	PedvaxHIB®	10 x 1 dose vials	$9.77	$21.52	3/31/04	Merck
Hib▲	HibTITER®	5 x 1 dose vial	$7.49	$22.86	3/31/04	Wyeth/Lederle
Hib▲	ActHIB®	5 x 1 dose vial	$7.52	$21.78	3/31/04	Aventis Pasteur

Vaccine	Brandname/ Tradename	Packaging	CDC Cost/Dose	Private Sector Cost/Doses	Contract End Date	Manufacturer
Influenza¤ Influenza Preservative-free (ages 6 to 35 months)	Fluzone® Fluzone® - Preservative Free	10 dose vials 10 x 1 Syringes No Needle	$6.60 $9.00	$8.50 $12.00	1/31/04	Aventis Pasteur
MMR√	MMRII®	10 x 1 dose vials	$15.99	$34.73	3/31/04	Merck
Pneumococcal 7-valent▲ (Pediatric)	Prevnar®	5 x 1 dose vial	$48.25	$61.65	3/31/04	Wyeth/Lederle
Pneumococcal Polysaccharide (23 Valent)	Pneumovax®	10 x 5 dose vial	$13.65	$18.33	6/30/04	Merck
Rubella▲	Meruvax II®	10 x 1 dose vials	$6.69	$14.24	3/31/04	Merck
Varicella▲	Varivax®	10 x 1 dose vial	$44.08	$58.11	3/31/04	Merck

√Vaccine cost includes $2.25 dose Federal Excise Tax
#Vaccine cost includes $3.00 per dose Federal Excise Tax
†Vaccine cost includes $1.50 per dose Federal Excise Tax

♪Vaccine cost includes $3.75 per dose Federal Excise Tax
▲Vaccine cost includes $0.75 per dose Federal Excise Tax
¤Vaccines which contain Thimerosal as a preservative

IMMUNOBIOLOGICALS
MANUFACTURERS/DISTRIBUTORS

Manufacturer/Distributor	Telephone	Products
Abbott Laboratories One Abbott Parkway Abbott Park, IL 60064-3500	708-937-5968 800-441-4987	Synagis
Alpha Therapeutic Corp. 2410 Lillyvale Ave. Los Angeles, CA 90032	213-225-2221 800-421-0008 800-292-6118	IGIV, VIG
American Red Cross Blood Services 1730 E Street NW, UUB-Second Floor Washington, DC 20006	202-628-9292 202-639-3347	IGIV
Aventis-Pasteur, Inc. Discovery Drive Swiftwater, PA 18370-0187	570-839-7187 800-822-2463	DTaP, DTaP-Hib, DT, Td, TT, Hib, IPV, Typhoid (Parenteral), JE, Influenza, Rabies, Meningococcal, BCG, Yellow Fever, IGIV, RIG
Berna Products Corporation (Subsidiary of Swiss Serum & Vaccine Inst.) 4216-Ponce de Leon Blvd. Coral Gables, FL 33146	305-443-2900 800-533-5899	TT, Typhoid (Oral)
BioPort Corporation 3500 N. Logan, PO Box 30035 Lansing, MI 48909	517-335-8050	Anthrax, Rabies, IGIM
Biocene Sclavo 5 Mansard Court Wayne, NJ 07470	201-696-8300 800-526-5260	Diphtheria Antitoxin
Centers for Disease Control & Prevention Drug Service 1600 Clifton Road, Mailstop D09 Atlanta, GA 30333	404-639-3670	Vaccinia, Botulinum antitoxin, Diphtheria antitoxin
General Injectables & Vaccines, Inc. Customer Service Department PO Box 9 Bastian, VA 24314	800-521-7468	Influenza
Glaxo SmithKline Pharmaceuticals One Franklin Plaza, PO Box 7929 Philadelphia, PA 19101	215-751-4000 800-366-8900	DTaP, Hep A, Hep B, Hep A/Hep B, Lyme
Greer Laboratories, Inc. 315 Willow Street NW, PO Box 800 Lenoir, NC 28645-0800	704-754-5320 800-438-0088	Plague
Hyland Division of Baxter Healthcare Corp. 550 North Brand Blvd. Glendale, CA 91203	800-423-2090 818-956-3200	IGIV, VIG

Manufacturer/Distributor	Telephone	Products
Massachusetts Public Health Biological Labs Department of Public Health 375 South Street, Jamaica Plain Boston, MA 02130	617-522-3700, ext 264	IGIM, CMV-IG, RSV-IG, VZIG, TIG, DT, Td, TT
MedImmune, Inc. 35 West Watkins Mill Road Gaithersburg, MD 20878	301-417-0770	CMV-IG, Synagis, RSV-IG
Merck & Co. Inc., Vaccine Division Sumneytown Pike, PO Box 4 West Point, PA 19486-0004	215-652-5000 800-637-2579	Hep A, Hep B, Hib, Hib/HepB, MMR, Measles, Mumps, Rubella, Varicella, PPV23
New York Blood Center Blood Derivatives 310 East 67th Street New York, NY 10021	212-570-3000 800-487-8751	IGIM
North American Biologicals, Inc. 16500 NW 15th Ave. Miami, FL 33169	305-625-5303	HBIG
Organon Inc. 375 Mount Pleasant Ave. West Orange, NJ 07052	201-325-4500 800-631-1253	BCG
Wyeth-Lederle Laboratories, Inc. PO Box 8299 Philadelphia, PA 19101-1245	215-688-4400 800-321-2304	Influenza, Hib, PPV23, PCV7

January 31, 2002

VACCINE MANAGEMENT

Recommendations for Handling and Storage of Selected Biologicals

January 2001

DEPARTMENT OF HEALTH AND HUMAN SERVICES

DTaP: Diphtheria Toxoid, Tetanus Toxoid, Acellular Pertussis Vaccine
DTaP/ACTHIB: Diphtheria Toxoid, Tetanus Toxoid, Acellular Pertussis Vaccine Combined with *Haemophilus* Conjugate Vaccine
DTP: Diphtheria Toxoid, Tetanus Toxoid, Whole Cell Pertussis Vaccine
DTP/HIB: Diphtheria Toxoid, Tetanus Toxoid, Whole Cell Pertussis Vaccine Combined with *Haemophilus* Conjugate Vaccine**

Shipping Requirements
Should be shipped in insulated container. Maintain temperature at 2°-8°C (35°-46°F). **Do not freeze** or store vaccine in direct contact with refrigerant.

Condition on Arrival*
Should not have been **frozen**. Refrigerate on arrival.

Storage Requirements
Refrigerate immediately on arrival. Store at 2°-8°C (35°-46°F). **Do not freeze**.

Shelf Life
Up to 18 months. Check date on vial or container.

Instructions for Reconstitution or Use
Shake vial vigorously before withdrawing each dose.

Shelf Life after Reconstitution, or Opening
Until outdated, if not contaminated.

Special Instructions
Rotate stock so that the shortest dated material is used first.

HBIG: Hepatitis B Immune Globulin

Shipping Requirements
Should be shipped in insulated container.

Condition on Arrival*
Should not have been **frozen**. Refrigerate on arrival.

Storage Requirements
Refrigerate immediately on arrival. Store at 2°-8°C (35°-46°F). **Do not freeze**.

Shelf Life
Up to 1 year. Check date on vial or container.

Instructions for Reconstitution or Use
Shake vial vigorously before withdrawing each dose.

Shelf Life after Reconstitution, or Opening
Until outdated, if not contaminated.

Special Instructions
Rotate stock so that the shortest dated material is used first.

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* If you have questions about the condition of the material at the time of delivery, you should: 1) Immediately place material in recommended storage; and 2) Notify the Quality Control office of the vaccine manufacturer; or 3) Notify the National Immunization Program, CDC, Atlanta, Georgia.

** ACTHIB – Aventis Pasteur – Should be used within 24 hours of reconstitution if used alone or when reconstituted with Aventis Pasteur DTP. If Aventis Pasteur DTaP is used to reconstitute ACTHIB, the TriHibit vaccine must be used within 30 minutes. Only Aventis Pasteur DTP, DTaP, or the diluent shipped with the product, may be used to reconstitute the Aventis Pasteur ACTHIB product. Pedvax Hib- Merck- available in liquid one-dose vials good for 24 hours after reconstitution if kept at 2°-8°C (35°-46°F).

Hepatitis Vaccine: Hepatitis A and Hepatitis B

Shipping Requirements ***
Use insulated container. Must be shipped with refrigerant.

Condition on Arrival*
Should not have been **frozen**. Refrigerate on arrival.

Storage Requirements
Refrigerate immediately on arrival. Store at 2°-8°C (35°-46°F). **Do not freeze**.

Shelf Life
Up to 3 years. Check date on vial or container.

Instructions for Reconstitution or Use
Shake vial vigorously before withdrawing each dose.

Shelf Life after Reconstitution, or Opening
Until outdated, if not contaminated.

Special Instructions
Rotate stock so that the shortest dated material is used first.

HiB or HBCV: *Haemophilus* Conjugate Vaccine

Shipping Requirements
Should be shipped in insulated container to help prevent **freezing**.

Condition on Arrival*
Should not have been **frozen**. Refrigerate on arrival.

Storage Requirements
Refrigerate immediately on arrival. Store at 2°-8°C (35°-46°F). **Do not freeze** – this reduces potency.

Shelf Life
Up to 2 years. Check date on vial or container.

Instructions for Reconstitution or Use
Reconstitute before use. If the product requires reconstitution, record date of reconstitution on vial. Use only diluent supplied.

Shelf Life after Reconstitution, or Opening of Multidose Vials – Stable until date of expiration, if stored at 2°-8°C (35°-46°F) when not in use.

Single Dose Vials** – Discard unused reconstituted vials after 24 hours.

Special Instructions
Rotate stock so that the shortest dated material is used first.

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** ACTHIB – Aventis Pasteur – Should be used within 24 hours of reconstitution if used alone or when reconstituted with Aventis Pasteur DTP. If Aventis Pasteur DTaP is used to reconstitute ACTHIB, the TriHibit vaccine must be used within 30 minutes. Only Aventis Pasteur DTP, DTaP, or the diluent shipped with the product, may be used to reconstitute the Aventis Pasteur ACTHIB product. Pedvax Hib- Merck- available in liquid one-dose vials good for 24 hours after reconstitution if kept at 2°-8°C (35°-46°F).

*** Engerix by Glaxo Smithkline may be shipped without refrigerant for up to 96 hours as long as the vaccine does not exceed 86°F.

Influenza Vaccine

Shipping Requirements
Should be delivered in the shortest possible time. Should not be exposed to excessive temperatures.

Condition on Arrival*
Should not have been **frozen**. Refrigerate on arrival.

Storage Requirements
Refrigerate immediately on arrival. Store at 2°-8°C (35°-46°F). **Do not freeze**.

Shelf Life
Formulated for use within current influenza season.

Instructions for Reconstitution or Use
Shake vial vigorously before withdrawing each dose.

Shelf Life after Reconstitution, or Opening
Until outdated, if not contaminated.

Special Instructions
Rotate stock so that the shortest dated vaccine is used first.

IPV: Poliovirus Vaccine – Inactivated

Shipping Requirements
Should be shipped in insulated container with refrigerant.

Condition on Arrival*
Should not have been **frozen**. Refrigerate on arrival.

Storage Requirements
Refrigerate immediately on arrival. Store at 2°-8°C (35°-46°F). **Do not freeze**.

Shelf Life
Up to 18 months. Check date on package.

Instructions for Reconstitution or Use
Ampoule – 1 dose: Tap the ampoule to ensure that the solution is in the lower portion rather than in the neck of the ampoule. With sterile needle and syringe, withdraw the contents of the ampoule into syringe, holding the ampoule in such a way that the point of the needle is kept immersed throughout the withdrawal.

Vial – 10 dose: Withdraw 0.5 cc of vaccine into separate sterile needle and syringe for each immunization.

Shelf Life after Reconstitution, or Opening
Ampoule: Discard if not used immediately.

Vial: Until outdated if not contaminated.

Special Instructions
Rotate stock so that the shortest dated vaccine is used first. The vaccine should be perfectly clear. Any vaccine showing particulate matter, turbidity, or change of color should be discarded.

* If you have questions about the condition of the material at the time of delivery, you should: 1) Immediately place material in recommended storage; and 2) Notify the Quality Control office of the vaccine manufacturer; or 3) Notify the National Immunization Program, CDC, Atlanta, Georgia.

Lyme Vaccine

Shipping Requirements
Should be shipped in insulated containers with temperature monitors, via overnight courier. Vaccine can tolerate up to 4 days at room temperature (20°-25°C; 68°-77°F). Coolant packs should be used to ship if the product is to be shipped for a long trip or if there are extremes of ambient temperature expected during the shipping time.

Condition on Arrival*
Should not have been **frozen**. Refrigerate upon arrival.

Storage Requirements
Refrigerate immediately upon arrival. Store at 2°-8°C (35°-46°F). **Do not freeze**.

Shelf Life
Up to 24 months. Check date on vial or container.

Instructions for Use
Shake well before withdrawal and use. Discard any vaccine remaining in a single dose vial.

Special Instructions
Inject intra-muscularly in the deltoid region. Do not inject intravenously, intradermally, or subcutaneously.

* If you have questions about the condition of the material at the time of delivery, you should: 1) Immediately place material in recommended storage; and 2) Notify the Quality Control office of the vaccine manufacturer; or 3) Notify the National Immunization Program, CDC, Atlanta, Georgia.

Measles Virus Vaccine, Mumps Virus Vaccine, Rubella Virus Vaccine Measles/Mumps/Rubella-MMR Vaccine, Measles/Rubella-MR Vaccine

Shipping Requirements

Vaccine – Use insulated container. Must be shipped with refrigerant. Maintain at 10°C (50°F) or less. If shipped with dry ice, diluent must be shipped separately.

Diluent – May be shipped with vaccine but **do not freeze.**

Condition on Arrival*

Should be below 10°C (50°F). If above this temperature, see instructions (*) below. **Do not use warm vaccine**. Refrigerate on arrival.

Storage Requirements

Vaccine may be stored separately from diluent. Store as follows: Vaccine – refrigerate immediately on arrival. Store at 2°-8°C (35°-46°F). **Protect from light at all times**, since such exposure may inactivate the virus.

Diluent may be stored at 15°-30°C (59°-86°F) room temperature. **Do not Freeze**.

Special Note: Freeze dried (lyophilized) vaccines may be maintained at freezer temperatures.

Shelf Life

Vaccine – Up to 2 years. Check date on container or vial.

Diluent – Check date on container or vial.

Instructions for Reconstitution or Use

Reconstitute just before using. Use **only** the diluent **supplied** to reconstitute the vaccine.

Single Dose Vials – Inject diluent into the vial of lyophilized vaccine and agitate to ensure thorough mixing. Withdraw entire contents into syringe and inject total volume of vaccine subcutaneously.

Multidose Vials – Withdraw **all** diluent from vial into syringe. Inject into vial of lyophilized vaccine and agitate to ensure thorough mixing.

10-Dose Vials – Withdraw 0.5cc of reconstituted vaccine into separate sterile needle and syringe for each immunization. Licensed for jet injector use.

50-Dose Vials – Use on jet injector only, with dosage set at 0.5cc.

Shelf Life after Reconstitution, Thawing, or Opening

After reconstitution, use immediately or store in a dark place at 2°-8°C (35°-46°F). **Discard if not used within 8 hours**.

Special Instructions

Rotate stock so that the shortest dated vaccine is used first.

10-Dose Vials – May be used for both jet injector and needle and syringe methods of immunization.

50-Dose Vials – For jet injector use. Should not be utilized via needle and syringe method of immunization.

NOTE: All materials used for administering live virus vaccines should be burned, boiled, or autoclaved prior to disposal.

D

* If you have questions about the condition of the material at the time of delivery, you should: 1) Immediately place material in recommended storage; and 2) Notify the Quality Control office of the vaccine manufacturer; or 3) Notify the National Immunization Program, CDC, Atlanta, Georgia.

Meningococcal Polysaccharide Vaccine, Groups A, C, Y, W-135

Shipping Requirements
Should be shipped in insulated containers with temperature monitors, via overnight courier. Powdered vaccine can tolerate up to 45° C (113° F) for 6-8 weeks. Coolant packs should be used to ship if the product is to shipped for a long trip or if there are extremes of ambient temperature expected during the shipping time.

Condition on Arrival*
Should not have been **frozen**. Refrigerate upon arrival.

Storage Requirements
Refrigerate immediately upon arrival. Store at 2°- 8° C (35°- 46° F). **Do not freeze**. Powdered form can tolerate 12 weeks at 37° C (98.6° F) and 6 to 8 weeks at 45° C (113° F).

Shelf Life
Expires within 18 months. Check date on vial or container.

Instructions for Reconstitution and Use
Reconstitute gently. This is a white powder that yields a clear colorless liquid when reconstituted with 0.5 ml of sterile water.

Shelf Life after Reconstitution or Opening
Use single dose vials within 24 hours of reconstitution. Unused portions of multi-dose vials may be refrigerated at 2°- 8° C (35°- 46° F) and used up to 10 days after reconstitution.

Special Instructions
Diluent to be used is sterile water for injection with 0.01% thimerosal. Reconstituted vaccine should be injected subcutaneously, or with a jet injector device only. Do not inject intra-dermally, intramuscularly, or intravenously.

Pneumococcal 7-valent Conjugate Vaccine

Shipping Requirements
Should be shipped in insulated containers at 2°- 8° C (35°- 46° F) with temperature monitors.

Condition on Arrival*
Should not have been **frozen**. Refrigerate upon arrival.

Storage Requirements
Refrigerate immediately upon arrival. Store at 2°-8°C (35°-46°F) **Do not freeze**.

Shelf Life
Up to 18 months. Check date on vial or container.

Instructions for Reconstitution and Use
Vaccine should appear as a homogenous white suspension after vigorous shaking. The vaccine should be administered intramuscularly only.

Special Instructions
This vaccine is a suspension containing adjuvant and, if after vigorous shaking, should not be used if the particles can not be resuspended.

D

* If you have questions about the condition of the material at the time of delivery, you should: 1) Immediately place material in recommended storage; and 2) Notify the Quality Control office of the vaccine manufacturer; or 3) Notify the National Immunization Program, CDC, Atlanta, Georgia.

Pneumococcal Polysaccharide Vaccine — Polyvalent

Shipping Requirements
Should be shipped in insulated container with refrigerant. **Do not freeze**.

Condition on Arrival*
Should not have been frozen. Refrigerate on arrival.

Storage Requirements
Refrigerate immediately on arrival. Store at 2°-8°C (35°-46°F) **Do not freeze**.

Shelf Life
Up to 2 years. Check date on container or vial.

Instructions for Reconstitution or Use
Vials — Shake vial vigorously before withdrawing each dose.

Prefilled Syringes — Follow manufacturer's directions.

Shelf Life after Reconstitution, or Opening
Until outdated, if not contaminated.

Special Instructions
Rotate stock so that the shortest dated vaccine is used first. **Do not inject intravenously**. Intradermal administration may cause severe local reactions and should be avoided.

Td—Adult: Tetanus-Diphtheria Toxoids
DT—Pediatric: Diphtheria-Tetanus Toxoids

Shipping Requirements
Should be shipped in insulated container. Maintain temperature at 2°-8°C (35°-46°F). **Do not freeze** or store vaccine in direct contact with refrigerant.

Condition on Arrival*
Should not have been **frozen**. Refrigerate on arrival.

Storage Requirements
Refrigerate immediately on arrival. Store at 2°-8°C (35°-46°F). **Do not freeze**.

Shelf Life
Up to 2 years. Check date on vial or container.

Instructions for Reconstitution or Use
Shake vial vigorously before withdrawing each dose.

Shelf Life after Reconstitution, Thawing, or Opening
Until outdated, if not contaminated.

Special Instructions
Rotate stock so that the shortest dated vaccine is used first.

* If you have questions about the condition of the material at the time of delivery, you should: 1) Immediately place material in recommended storage; and 2) Notify the Quality Control office of the vaccine manufacturer; or 3) Notify the National Immunization Program, CDC, Atlanta, Georgia.

Varicella (Chickenpox) Vaccine

Shipping Requirements
Ship with dry ice only. Should be delivered within 2 days.

Conditions on Arrival*
Should be frozen. Vaccine should remain at -20°C (-5°F) until arrival at health care facility. Dry ice should still be present in the shipping container when vaccine is delivered. See footnote below.

Storage Requirements
Maintain in a continuously frozen state at -15°C (5°F) or colder. **No freeze thaw cycles are allowed with this vaccine**. Vaccine should only be stored in freezers or refrigerator/freezers with separate doors and compartments. Acceptable storage may be achieved in standard household freezers purchased in the last 10 years, and standard household refrigerator/freezers with a separate, sealed freezer compartment. In order to maintain this temperature it will be necessary in most refrigerator/freezer models to turn the temperature dial down to the coldest setting. This may result in the refrigerator compartment temperature being lowered as well. Careful monitoring of the refrigerator temperature to avoid freezing killed or inactivated vaccines will be necessary.

Shelf Life
Up to 18 months. Check date on package and use the earliest expiration date first.

Instructions for Reconstitution or Use
This product is a lyophilized (freeze dried) product and should only be reconstituted with the diluent provided with the vaccine. This vaccine must be used within 30 minutes of reconstitution or should be discarded.

Special Instructions
If this vaccine is stored at a temperature warmer than -15°C, it will result in a loss of potency and a reduced shelf life. If a power outage or some other situation occurs that results in the vaccine storage temperature rising above the recommended storage, the health care provider should contact Merck, the manufacturer, at 1-800-9-827-4829 for a re-evaluation of the products potency before using the vaccine.

D

* If you have questions about the condition of the material at the time of delivery, you should: 1) Immediately place material in recommended storage; and 2) Notify the Quality Control office of the vaccine manufacturer; or 3) Notify the National Immunization Program, CDC, Atlanta, Georgia.

Temperature Log for Vaccines (Fahrenheit)

Month/Year:_____ **Days 1–15**

Instructions: Place an "X" in the box that corresponds with the temperature. The hatched zones represent unacceptable temperature ranges. If the temperature recorded is in the hatched zone: 1. **Store the vaccine** under proper conditions as quickly as possible, 2. **Call the vaccine manufacturer(s)** to determine whether the potency of the vaccine(s) has been affected, 3. **Call the immunization program at your local health department** for further assistance: (_____) _____, and 4. **Document the action taken** on the reverse side of this log.

Day of Month		1		2		3		4		5		6		7		8		9		10		11		12		13		14		15	
Exact Time																															
°F Temp		am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm
	≥49°																														
	48°																														
	47°																														
	46°																														
	45°																														
	44°																														
Refrigerator temperature	43°																														
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Freezer temp	≥8°																														
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	6°																														
	5°																														
	4°																														
	≤3°																														
Room temp																															
Staff Initials																															

Adapted by the Immunization Action Coalition courtesy of the Michigan Department of Community Health

www.immunize.org/catg.d/p3039.pdf • Item #P3039 (11/03)

Temperature Log for Vaccines (Fahrenheit)

Month/Year:_____ **Days 16–31**

Instructions: Place an "X" in the box that corresponds with the temperature. The hatched zones represent unacceptable temperature ranges. If the temperature recorded is in the hatched zone: 1. **Store the vaccine** under proper conditions as quickly as possible, 2. **Call the vaccine manufacturer(s)** to determine whether the potency of the vaccine(s) has been affected, 3. **Call the immunization program at your local health department** for further assistance: (_____) _____, and 4. **Document the action taken** on the reverse side of this log.

Day of Month		16		17		18		19		20		21		22		23		24		25		26		27		28		29		30		31	
Exact Time																																	
°F Temp		am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm
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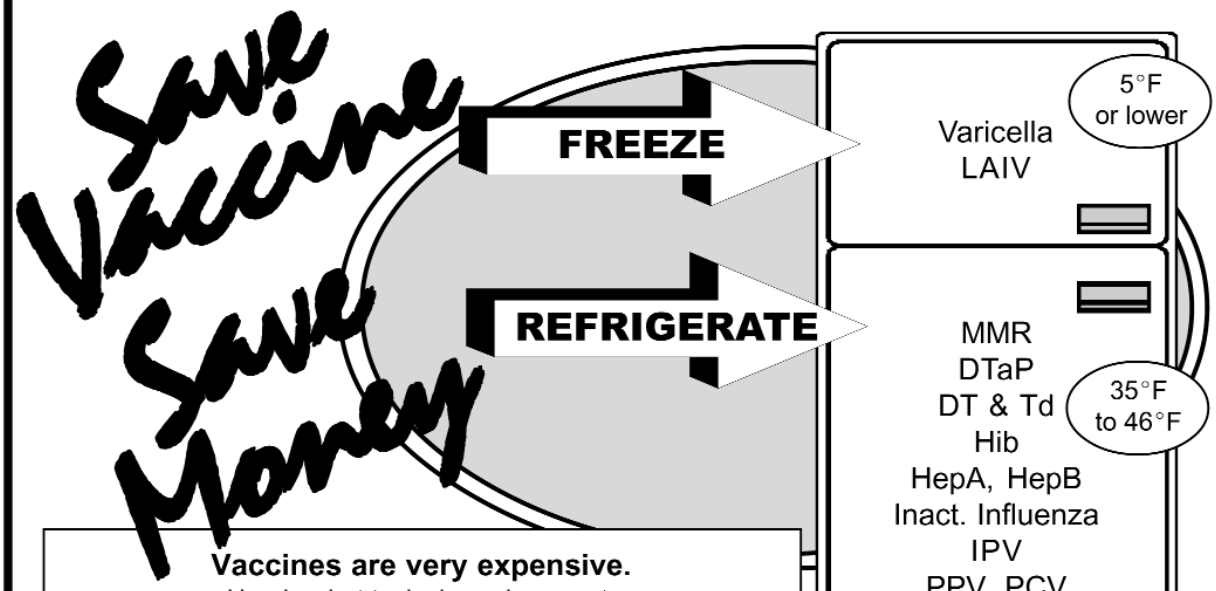
	33°																																
	32°																																
	31°																																
	30°																																
	29°																																
	≤28°																																
Freezer temp	≥8°																																
	7°																																
	6°																																
	5°																																
	4°																																
	≤3°																																
Room temp																																	
Staff Initials																																	

Adapted by the Immunization Action Coalition courtesy of the Michigan Department of Community Health

Handle With Care



Vaccines are very expensive.
Here's what typical vaccines cost:

DTaP: $21 per dose	PCV: $61 per dose
Hepatitis B: $23 per dose	Hib: $21 per dose
MMR: $34 per dose	Varicella: $58 per dose

If we don't protect our vaccines, they won't protect our patients!

Vaccine Handling Rules

Refrigerate vaccine immediately when it is received.* Store varicella vaccine in freezer. Do not store vaccine in the door of the refrigerator.

Protect MMR from light at all times and keep it cold. Don't get the vial from the refrigerator until time to reconstitute and administer. Diluent does not need refrigeration if MMR is administered right after diluent is added.

Rotate vaccine stock to avoid outdating. Note the expiration dates on vials or cartons and use short-dated vaccines first. Keep vials and polio dispettes in their cartons. Don't use outdated vaccine. Don't over-order.

Safeguard the refrigerator. Make sure it stays plugged in. It should have a safety-lock type plug.

Post a warning sign so electricians or janitors don't accidentally unplug the refrigerator or turn off the circuit or electricity.

Maintain proper temperatures in the refrigerator (2°C to 8°C or 35°F to 46°F) and in the freezer (-15°C or 5°F or lower). If space allows, help keep temperatures stable by placing big plastic containers of water in the refrigerator, cold packs (blue ice) in the freezer.

Check refrigerator and freezer twice a day, first thing in the morning and last thing at night. *AM:* See if temperatures are correct. (Keep kitchenware-type thermometers in both refrigerator and freezer. *PM:* Make sure the doors are shut tightly and the unit is plugged in.

* Refer to package insert for specific instructions on each vaccine. If you have questions about the condition of the vaccines at the time of delivery, first store them properly, then notify the supplier and get instructions.

WARNING

Do not unplug the refrigerator/
freezer or break circuit.
Expensive vaccine in storage.

In event of electrical problem, immediately contact:

WARNING

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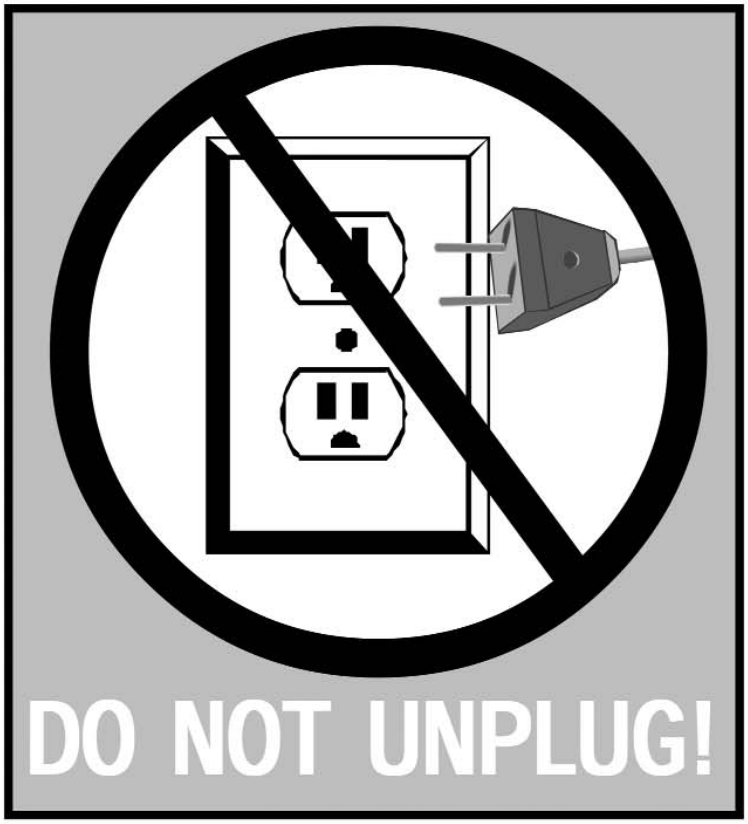
DO NOT UNPLUG!


DO NOT UNPLUG!


DO NOT UNPLUG!

Checklist for Safe Vaccine Handling and Storage

Here are the 20 most important things you can do to safeguard your vaccine supply. Are you doing them all? Reviewing this list can help you improve your clinic's vaccine management practices.

Yes	No		
____	____	1.	We have a designated person in charge of the handling and storage of our vaccines.
____	____	2.	We have a back-up person in charge of the handling and storage of our vaccines.
____	____	3.	A vaccine inventory log is maintained that documents: ____ Vaccine name and number of doses received ____ Date the vaccine was received ____ Arrival condition of vaccine ____ Vaccine manufacturer and lot number ____ Vaccine expiration date
____	____	4.	Our refrigerator for vaccines is either household-style or commercial-style, NOT dormitory-style. The freezer compartment has a separate door.
____	____	5.	We do NOT store any food or drink in the refrigerator or freezer.
____	____	6.	We store vaccines in the middle of the refrigerator or freezer, and NOT in the door.
____	____	7.	We stock and rotate our vaccine supply so that the newest vaccine of each type (with the longest expiration date) is placed behind the vaccine with the shortest expiration date.
____	____	8.	We check vaccine expiration dates and we first use those that will expire soonest.
____	____	9.	We post a sign on the refrigerator door showing which vaccines should be stored in the refrigerator and which should be stored in the freezer.
____	____	10.	We always keep a thermometer in the refrigerator.
____	____	11.	The temperature in the refrigerator is maintained at 35–46°F (2–8°C).
____	____	12.	We keep extra containers of water in the refrigerator to help maintain cold temperatures.
____	____	13.	We always keep a thermometer in the freezer.
____	____	14.	The temperature in the freezer is maintained at +5°F (-15°C) or colder.
____	____	15.	We keep ice packs and other ice-filled containers in the freezer to help maintain cold temperatures.
____	____	16.	We post a temperature log on the refrigerator door on which we record the refrigerator and freezer temperatures twice a day—first thing in the morning and at clinic closing time—and we know whom to call if the temperature goes out of range.
____	____	17.	We have a "Do Not Unplug" sign next to the refrigerator's electrical outlet.
____	____	18.	In the event of a refrigerator failure, we take the following steps: ____ We assure that the vaccines are placed in a location with adequate refrigeration. ____ We mark exposed vaccines and separate them from undamaged vaccines. ____ We note the refrigerator or freezer temperature and contact the manufacturer or state health department to determine how to handle the affected vaccines. ____ We follow the manufacturer's or health department's instructions as to whether the affected vaccines can be used, and, if so, we mark the vials with the revised expiration date provided by the manufacturer or health department.
____	____	19.	We have obtained a detailed written policy for general and emergency vaccine management from our local or state health department.
____	____	20.	If all above answers are "yes," we are patting ourselves on the back. If not, we have assigned someone to implement needed changes!

Item #P3035 (11/01)

Immunization Action Coalition • 1573 Selby Avenue • St. Paul, MN 55104 • (651) 647-9009 • www.immunize.org

Translations of Foreign-Language Terms

Table 1: Vaccines and Biologics Used in the U.S. and Foreign Markets. This table lists many vaccine products that are (or have been) used in the U.S. and in international markets. It is organized alphabetically by product or trade name. Products known to be no longer in use are marked with an asterisk (*).

Table 2: Translation of Vaccine-Related Terms. This table contains many terms found on immunization records of persons vaccinated in foreign countries, along with their English equivalents. In many cases the term refers to the name of the disease.

Table 3: Vaccine-Related Terms using the Cyrillic Alphabet. This table lists Russian and Ukranian words using the Cyrillic alphabet. Transliteration of Cyrillic characters into Latin letters is difficult, because there is no international agreement among experts on a unified system of converting from the Cyrillic to the Latin alphabet.

Table 4: Translation of Disease Terms into Several Indo-European Languages and Somali.

Table 5: Translation of Disease Terms into Western European and Scandinavian Languages.

The primary source for these tables is the Minnesota Department of Health Immunization Program (see http://www.health.state.mn.us.divs/dpc/adps/manual/pgappend/pgunited.htm).
Thanks also to the Washington State Department of Health's Immunization Manual (http://www.doh.wa.gov/cfh/immunize/documents/schmanul.pdf), Appendix E.

These lists are not comprehensive and, although we have checked and rechecked our sources, we do not claim complete accuracy.

Table 1: Vaccines and Biologics Used in U.S. and Foreign Markets

This table lists many vaccine products that are (or have been) used in the U.S. and in international markets. While we have checked and rechecked our sources for this information, we do not claim complete accuracy.

Product or Trade name	Antigen(s)	Manufacturer (country)
A.D.T.	Diphtheria, tetanus (adsorbed)	Commonwealth (Australia)
A.K.D.S.	Diphtheria, tetanus, pertussis	_____ (U.K.)
AC Vax	Meningococcus (polysaccharide)	GSK (U.K.)
Acel-Imune *	Diphtheria, tetanus, (acellular) pertussis	WYE (U.S.)
ACTAcel	Diphtheria, tetanus, pertussis, Hib	AVP (Argentina)
ActHIB	Haemophilus influenzae type b (PRP-T)	AVP (U.S.)
Aimmugen	Hepatitis A (inactivated)	Chemo-Sero-Therapeutic Resh Inst (Japan)
Aldiana	Diphtheria (absorbed)	Sevac (Czechoslovakia)
Alditeana	Diphtheria, tetanus (absorbed)	Sevac (Czechoslovakia)
Alditerpera	Diphtheria, tetanus (adsorbed), pertussis	Sevac (Czechoslovakia)
Amaril	Yellow fever	AVP (France)
AMC	*Haemophilus influenzae,* type b	_____ (Cuba)
Anadifterall	Diphtheria (adsorbed)	CHIR (Italy)
Anatetall	Tetanus (adsorbed)	CHIR (Italy)
Arilvax	Yellow fever	MEDI (U.K.)
Attenuvax *	Measles (live, further attenuated)	MRK (U.S.)
AVAC-1, AVA	Anthrax	(for U.S. military use)
AVAXIM	Hepatitis A	AVP (_____)
B-CAPSA *	*Haemophilus influenzae* type b (polysaccharide, 1987 to 1989)	Mead Johnson (U.S.)
BayGam	Human immunoglobulin	Bayer Corporation (U.S.)
BayHep B	Hepatitis B immune globulin (human)	Bayer Corporation (U.S.)
BayRab	Rabies immune globulin	Bayer Corporation (U.S.)
BayTet	Tetanus immune globulin (human)	Bayer Corporation (U.S.)
BCG	Tuberculosis	Multiple manfacturers and countries
Begrivac	Influenza (split virus)	CHIR (Germany)
Biavax II *	Rubella, mumps (live)	MRK (U.S.)
Biavax *	Rubella, mumps (live)	MRK (U.S.)
BIG	Botulism immune globulin (not a vaccine)	
Biken-HB	Hepatitis B (recombinant)	BIK (Japan)

* = product no longer distributed in U.S.

Product or Trade name	Antigen(s)	Manufacturer (country)
Bimmugen	Hepatitis B (recombinant, adsorbed, yeast derived)	Chemo-Sero-Therapeutic Resh Inst (Japan)
BioThrax	Anthrax (adsorbed)	BPT (U.S.)
Biviraten Berna	Measles, mumps (live)	BER (Switzerland)
BVAC	Botulinum antitoxin	(for U.S. military use)
C.D.T.	Diphtheria, tetanus (pediatric, adsorbed)	Commonwealth (Australia)
Celluvax	Pertussis (acellular)	CHIR (Italy)
Cendevax *	Rubella (live) 3/70 to 1976	RIT/SmithKline & French (U.S.)
Certiva *	Diphtheria, tetanus, (acellular) pertussis	Baxter Hyland (U.S.)
Cocquelucheau	Pertussis (adsorbed)	AVP (France)
Comvax	Hepatitis B, *Haemophilus influenza* type b	MRK (U.S.)
Daptacel	Diphtheria, tetanus, (acellular) pertussis	AVP (U.S.)
D.S.D.P.T.	Diphtheria, tetanus, pertussis (adsorbed)	Dong Shin Pharm (Korea)
D.T. Bis Rudivax	Diphtheria, tetanus, rubella	AVP (France)
Di Te Per Pol Impfstoff	Diphtheria, tetanus, pertussis, polio	BER (Switzerland)
Di-Te-Pol	Diphtheria, tetanus, polio	Statens Seruminstitut (Denmark)
Dif-Tet-All	Diphtheria, tetanus	CHIR (Italy)
DIFTAVAX	Diphtheria, tetanus, polio	AVP (_____)
DiTe Anatoxal	Diphtheria, tetanus (adsorbed)	BER (Switzerland)
Ditoxim	Diphtheria, tetanus (adsorbed)	Dong Shin Pharm (Korea)
Double Anigen B.I.	Diphtheria, tetanus	Bengal Immunity Co (India)
Dryvax	Smallpox	WYE (U.S.)
DT	Diphtheria, tetanus (for pediatric use)	AVP (U.S.)
DT *	Diphtheria, tetanus (for pediatric use)	WYE (U.S.)
DT TAB	Diphtheria, tetanus, *Salmonella typhi, Paratyphi A & B*	AVP (France)
DTaP (generic)	Diphtheria, tetanus, (acellular) pertussis	AVP, WYE, GSK (U.S.)
DTwP (generic) *	Diphtheria, tetanus, (whole-cell) pertussis	AVP, WYE, GSK (U.S.)
Dual Antigen SII	Diphtheria, tetanus (adsorbed)	Serum Institute of India (India)
Ecolarix *	Measles, rubella (live)	RIT/SmithKline (U.S.)
eIPV	Polio (inactivated, enhanced potency)	AVP (U.S.)
Encepur	Tick-borne encephalitis	Chiron (Europe)
Engerix-B	Hepatitis B	GSK (U.K., U.S.)
Enivac-HB	Hepatitis B (Recombinant DNA)	Centro de Ingenieria Genetica Y Biotecnologia (Cuba)

* = product no longer distributed in U.S.

Product or Trade name	Antigen(s)	Manufacturer (country)
Epaxal Berna	Hepatitis A - virosomal vaccine	BER (Switzerland)
Ervevax RA 27/3	Rubella (live)	GSK (Belgium)
Esavalenti	Diphtheria, tetanus, pertussis, polio, Hib, hepatitis B	_____ (Italy)
Euvax-B	Hepatitis B (recombinant DNA)	LG Chemical (South Korea)
Flu Shield *	Influenza	WYE (U.S.)
Fluad, Agrippal-S1	Influenza	CHIR (Italy)
FluMist	Influenza (live, attenuated, intranasal)	MEDI (U.S.)
Fluogen *	Influenza	PD (U.S.)
Fluvirin	Influenza	EVN (U.S.)
Fluzone	Influenza	AVP (U.S.)
FSME-IMMUNE	Tick-borne encephalitis	Baxter (Austria)
Funed-CEME	Diphtheria, tetanus, pertussis	Belo Horizonte (Brazil)
GenHevac B Pasteur	Hepatitis B	AVP (_____)
Gunevax	Rubella	CHIR (Italy)
Havrix	Hepatitis A	GSK (U.K., U.S.)
H-BIG	Hepatitis B immune globulin	NABI, Bayer Corporation (U.S.)
HbOC	Chemical abbreviation for HibTITER	WYE (U.S.)
HBY	Hepatitis B (recombinant)	KGC (Japan)
Hepaccine-B	Hepatitis B (plasma derived)	Chiel Jedang (South Korea)
Hepavax-B	Hepatitis B (plasma derived)	Korea Green Cross (South Korea)
Hepavax-Gene	Hepatitis B (recombinant DNA)	Korea Green Cross (South Korea)
Heprecomb	Hepatitis B (yeast derived)	BER (Switzerland)
Heptavax B *	Hepatitis B (plasma-derived) 1982 to ___	MRK (U.S.)
Hevac B	Hepatitis B (plasma derived)	AVP (France)
Hexavac	Diphtheria, tetanus, pertussis, polio, hepatitis B, Hib	AVP (Europe)
HibTITER	*Haemophilus influenzae* type b (HbOC)	WYE (U.S.)
Hinkuys karokoe	Pertussis (adsorbed)	Natl. Public Health Institute (Finland)
HPV-77; DK-5	Rubella (live) 1969-1979	MRK (U.S.)
HPV-77; DK-12	Rubella (live) 1970-1973	MRK (U.S.)
HRIG	Rabies immune globulin	AVP; Bayer Corporation (U.S.)
Humotet-anti Tetanus	Tetanus	Wellcome (U.K.)
Hyper-Tet (now called "BayTet")	Tetanus immune globulin	Bayer Corporation (U.S.)

* = product no longer distributed in U.S.

Product or Trade name	Antigen(s)	Manufacturer (country)
IBV	Polio (inactivated)	Statens Seruminstitut (Denmark)
Immune Globulin Intramuscular (Human)	Broad-spectrum immune globulins	MA, BPT, New York Blood Ctr, Bayer Corporation, CEN (U.S.)
Imogam Rabies - HT	Rabies immune globulin	AVP (U.S.)
Imovax	Rabies	AVP (U.S.)
Imovax Parotiditis	Mumps	AVP (France)
Imovax Polio	Polio	AVP (France)
Imovax Sarampion	Measles	AVP (France)
Imovax D.T.	Diphtheria, tetanus	AVP (_____)
Imovax Gripe	Influenza	AVP (_____)
Imovax R.O.R.	Measles, rubella, mumps (live)	AVP (France)
Imovax Rubeola	Measles	AVP (International)
Imovax Mumps	Mumps	AVP (_____)
Imovax Oreillons	Mumps	AVP (France)
Imovax Rabies I.D.	Rabies vaccine (HDCV)	AVP (U.S.)
Imovax Rabies I.M.	Rabies vaccine (HDCV)	AVP (U.S.)
Infanrix	Diphtheria, tetanus, (acellular) pertussis	GSK (Belgium, U.S.)
Ipad TP	Tetanus, polio	AVP (France)
IPOL	Polio (enhanced potency, inactivated)	AVP (U.S.)
IPV	Polio (inactivated)	General term for inactivated polio vaccine
Istivac	Influenza	AVP (_____)
JE-VAX	Japanese encephalitis	AVP (U.S.)
Kaksoisrokote Dubbelvaccin	Diphtheria, tetanus (adsorbed)	Natl. Public Health Institute (Finland)
Kikhoste-Vaksine	Pertussis	Statens Institutt for Folkehelse (Norway)
Lancy Vaxina *	Smallpox	Swiss Serum and Vaccine Institute (Switzerland)
Lavantuu tirokote	Typhoid	Central Pub Health Lab (Finland)
Liovax *	Smallpox	CHIR (Italy)
Lirubel *	Measles, rubella (live) 4/74 to 6/78	Dow/PitneyMoore (U.S.)
Lirugen	Measles	AVP (Int'l)
Lirugen *	Measles (live) 2/65 to 6/78	Dow (U.S.)
LM - 3 RIT	Measles, mumps, rubella (live)	Dong Shin Pharm (Korea)
LM - 2 RIT	Measles, mumps (live)	Dong Shin Pharm (Korea)
LTEANAS Imuna	Tetanus (adsorbed)	Imuna sp. (Slovakia)
LYMErix *	Lyme disease	GSK (U.S.)

* = product no longer distributed in U.S.

Product or Trade name	Antigen(s)	Manufacturer (country)
Lyovac Attenuvax *	Measles (live, attenuated)	MRK (U.S.)
Lyovac Meruvax *	Rubella (live)	MRK (U.S.)
M-R Vax II *	Measles, rubella (live)	MRK (U.S.)
M-Vax *	Measles (live) 5/63 to 1979	WYE (U.S.)
Masern-Impfstoff SSW	Measles (live)	_____ (Germany)
Measles Vaccine DK3 *	Measles (live) 1964 to 1972	Philips Roxane, Inc. (U.S.)
Measles *	Measles (inactivated) 1963 to 1966 Measles (live) 12/64 to 1974	Eli Lilly (U.S.)
Mencevax A	Meningococcus (polysaccharide) (Group A)	SmithKline/RIT (Belgium)
Meningitec	Meningococcus (conjugate) (Group C)	WYE (U.K., Australia)
Menomune-A/C/Y/W-135	Meningococcus (polysaccharide) (Groups A,C, Y, W-135)	AVP (U.S.)
Menpovax 4	Meningococcus (polysaccharide) (Groups A & C)	CHIR (Italy)
Menpovax A+C	Meningococcus (Groups A & C)	CHIR (Italy)
Meruvax *	Rubella (live) 6/69 to ____	MRK (U.S.)
Meruvax II	Rubella (live)	MRK (U.S.)
Mevilin-L *	Measles (live)	Glaxo Operations
MMR *	Measles, mumps, rubella (live) 6/71 to ____	MRK (U.S.)
MMR (generic) *	Measles, mumps, rubella (live) 4/74 to 6/78	Dow Chemical (U.S.)
M-M-R II	Measles, mumps, rubella (live)	MRK (U.S.)
Moniarix	Pneumococcal (polysaccharide)	SmithKline/RIT (Belgium)
Mopavac Sevac	Measles, mumps (live, attenuated)	Institute of Sera and vaccines (Czechoslovakia)
MOPV *	Polio (live, Sabin, monovalent types I, II, III)	WYE (U.S.)
Morbilvax	Measles (live, attenuated)	CHIR (Italy)
Morubel	Measles, rubella (live, attenuated)	CHIR (Italy)
Moruman Berna	Measles immunglobulin	BER (Switzerland)
Morupar	Measles, mumps, rubella (live, attenuated)	CHIR (Italy)
Movivac	Measles (live, attenuated)	____ (Czechoslovakia)
M-R VAX *	Measles, rubella (live) 7/71 to ____	MRK (U.S.)
Mumaten Berna	Mumps (live)	BER (Switzerland)
Mumps (generic) *	Mumps (live) 4/74 to 6/78	Dow Chemical (U.S.)
Mumps (generic) *	Mumps (inactivated) 1950 to 1978	WYE (U.S.)
Mumps (generic) *	Mumps (inactivated) 1950 to 1977	Eli Lilly (U.S.)
Mumpsvax *	Mumps (live)	MRK (U.S.)

* = product no longer distributed in U.S.

Product or Trade name	Antigen(s)	Manufacturer (country)
Mutagrip	Influenza	AVP (_____)
Nabi-HB	Hepatitis B immune globulin	NABI (U.S.)
Nothav	Hepatitis A	CHI (Italy)
OmniHIB *	*Haemophilus influenzae* type b (PRP-T)	GSK, AVP (U.S.)
OPV	General term for oral polio vaccine	
Orimune *	Polio vaccine (oral, trivalent)	WYE (U.S.)
Pariorix	Mumps (live)	SmithKline/RIT (Belgium)
Pavivac-Sevac	Mumps (live)	Institute of Immunology (Croatia)
PCV, PCV7	General term for pneumococcal conjugate (7-valent)	
Pediarix	Diphtheria, tetanus, (acellular) pertussis, hepatitis B, IPV	GSK (U.S.)
PedvaxHIB	*Haemophilus influenzae* type b (PRP-OMP)	MRK (U.S.)
Penta	Diphtheria, tetanus, (acellular) pertussis, Hib, IPV	AVP (Canada)
Pentacel	Diphtheria, tetanus, pertussis, polio, Hib	AVP (Canada)
Pentacoq	Diphtheria, tetanus, pertussis, polio, Hib	AVP (_____)
PENTAct-HIB	Diphtheria, tetanus, pertussis, polio, Hib	AVP (_____)
Pentavac	Diphtheria, tetanus, pertussis, polio, Hib	AVP (_____)
Pentavalente	Diphtheria, tetanus, pertussis, hepatitis B, Hib	_____ (Mexico)
Pentavalenti	Diphtheria, tetanus, pertussis, polio, Hib OR Diphtheria, tetanus, pertussis, polio, hepatitis B	_____ (Italy)
Pfizer Vax-Measles K *	Measles (inactivated) 3/63 to 1970	Pfizer (U.S.)
Pfizer Vax-Measles L *	Measles (live) 2/65 to 1970	Pfizer (U.S.)
Pluserix	Measles, mumps, rubella	GSK (_____)
Pneumovax 23	Pneumococcal (polysaccharide)	MRK (U.S.)
PNU-IMUNE 23 *	Pneumococcal (polysaccharide)	WYE (U.S.)
POLIAcel	Diphtheria, tetanus, pertussis, polio, HIB	AVP (Argentina)
PPV, PPV23	General term for pneumococcal polysaccharide (23-valent)	
Prevnar	Pneumococcal (7-valent, conjugate)	WYE (U.S.)
Priorix	Measles, mumps, rubella (live)	GSK (U.K.)
ProHIBiT *	*Haemophilus influenzae* type b (PRP-D)	AVP (U.S.)
PRP-OMP	Chemical abbreviation for PedvaxHIB	
PRP-T	Chemical abbreviation for ActHIB	
Purivax *	Polio (inactivated) 1956 to 1965	MRK (U.S.)

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Product or Trade name	Antigen(s)	Manufacturer (country)
QUADRAcel	Diphtheria, tetanus, pertussis, polio	AVP (Argentina)
QUADRAcel/Hibest	Diphtheria, tetanus, pertussis, polio, Hib	AVP (Argentina)
Quadravax	DTP + polio	GSK
Quadrigen *	DTP + polio (1959-1968)	PD (U.S.)
Quatro-Virelon	Diphtheria, tetanus, polio	CHI (Germany)
Quintuple	Diphtheria, tetanus, pertussis, Hib, Polio	GSK (Mexico)
R-HB Vaccine	Hepatitis B (recombinant)	Mitsubishi Chem Corp (Japan)
R-VAC	Rubella (live)	Serum Institute (India)
RA27/3	Rubella (live)	MRK (U.S.)
RabAvert	Rabies (PCEC)	CHI (U.S.)
Recombivax HB	Hepatitis B (recombinant)	MRK (U.S.)
Respigam, RSV-IVIG	Respiratory syncytial virus immune globulin (not a vaccine)	MEDI (U.S.)
RIG (generic)	Rabies immune globulin	Bayer Corporation, AVP (U.S.)
Rimevax	Measles (live)	SmithKline/RIT (Belgium)
Rimparix	Measles (live)	SmithKline/RIT
RIT - LM-2	Measles, mumps (live)	Dong Shin Pharm (Korea)
RIT - LM-3	Measles, mumps, rubella (live)	Dong Shin Pharm (Korea)
RotaShield, RRV-TV *	Rotavirus — 8/98 to 7/99	WYE (U.S.)
Rouvax	Measles (live, attenuated)	AVP (France)
Rubeaten Berna	Rubella (live)	BER (Switzerland)
Rubella (generic) *	Rubella (live) 12/69 to 1972	Philips Roxane (U.S.)
Rubellovac	Rubella	CHIR (Germany)
Rubelogen *	Rubella (live) 12/69 to 1972	PD (U.S.)
Rubeovax *	Measles (live) 2/63 to 1971	MRK (U.S.)
Rudi-Rouvax	Measles, rubella (live)	AVP (France)
Rudivax	Rubella (live, attenuated)	AVP (France)
RVA (generic)	Rabies vaccine adsorbed	BP (U.S.)
Sabin	General term for oral (live) polio vaccine	
Sahia	Polio (live, oral)	Multiple manufacturers
Salk	General term for injectable (inactivated) polio vaccine	
Sandovac	Influenza	____ (Germany)
Serobacterin *	Pertussis – 1945 to 1954	MRK (U.S.)
Sii Triple Antigen	Diphtheria, tetanus, pertussis	Serum Institute (India)

* = product no longer distributed in U.S.

Product or Trade name	Antigen(s)	Manufacturer (country)
Stamaril	Yellow fever (live, attenuated)	AVP (France)
Synagis (palizivumab)	Respiratory syncytial virus immune globulin (not a vaccine)	MEDI (U.S.)
T. Polio	Tetanus toxoid, polio	AVP (Canada)
T.A.B.	Typhoid, paratyphoid (A & B)	- Institute Pasteur (Tunisia) - _____ (Egypt) - Pharmaceutical Industries Corp. (Burma)
T-Immun	Tetanus (adsorbed)	____ (Austria)
Td (generic)	Tetanus, diphtheria (adult formulation)	AVP, BP (U.S.)
Te/Vac/Ptap	Tetanus	_____ (Yugoslavia)
Te Anatoxal	Tetanus	BER (Europe)
Telvaclptap	Tetanus	_____ (Yugoslavia)
Tetagrip	Tetanus, influenza	AVP (France)
Tetamun SSW	Tetanus (fluid, nonadsorbed)	Veb Sachsisches Serumwerk (Germany)
Tetamyn	Tetanus	Bioclon, S.A. De C.V. (Mexico)
Tetanol	Tetanus (adsorbed)	CHIR (Germany)
Tetasorbat SSW	Tetanus (adsorbed)	Veb Sachsisches Serumwerk (Germany)
Tetavax	Tetanus (adsorbed)	AVP (France)
Tetracoq 05	Diphtheria, tetanus, pertussis, polio	AVP (France)
TetrAct-HIB	Diphtheria, tetanus, pertussis, Hib	AVP (_____)
Tetramune *	Diphtheria, tetanus, pertussis, Hib	WYE (U.S.)
Tetravalenti	Diphtheria, tetanus, pertussis, hepatitis B	_____ (Italy)
Tetravax *	Diphtheria, tetanus, pertussis, polio - 1959 to 1965	MRK (U.S.)
Tice BCG	Bacillus Calmette-Guérin vaccine (for TB)	OTC (U.S.)
TIG	Tetanus immune globulin (generic)	Bayer Corporation (U.S.)
TOPV	Trivalent oral polio vaccine	Multiple manufacturers and countries
Titifica	Typhoid and para typhoid	_____ (Italy)
Tresivac Lyopholized	Measles, mumps, rubella	Serum Institute (India)
Triacel	Diphtheria, tetanus, (acellular) pertussis	AVP (_____)
Triacelluvax	Diphtheria, tetanus, (acellular) pertussis	CHIR (Europe)
TriHIBit	Diphtheria, tetanus, (acellular) pertussis, Hib	AVP (U.S.)
Tri-Immunol *	Diphtheria, tetanus, pertussis	WYE (U.S.)
Trimovax	Measles, mumps, rubella (live)	AVP (France)
Trinivac *	Diphtheria, tetanus, pertussis – 1952 to 1964	MRK (U.S.)
Tripacel	Diphtheria, tetanus, (acellular) pertussis	AVP (_____)

* = product no longer distributed in U.S.

Product or Trade name	Antigen(s)	Manufacturer (country)
Tripedia	Diphtheria, tetanus, (acellular) pertussis	AVP (U.S.)
Triple antigen	Diphtheria, tetanus, pertussis	- Chowgule & Co. (India) - CSL Limited (Australia)
Triple Sabin	Polio (live, oral)	_____ (Mexico)
Triple	Diphtheria, tetanus, pertussis	_____ (Cuba, Mexico)
Triple Viral	Measles, mumps, rubella	_____ (Mexico)
Trivacuna Leti	Diphtheria, tetanus (adsorbed), pertussis	Laboratory Leti (Spain)
Trivax	Diphtheria, tetanus (plain), pertussis	Wellcome (U.K.)
Trivax-ad	Diphtheria, tetanus (adsorbed), pertussis	- EVN (UK) - Wellcome (UK)
Trivax-Hib	Diphtheria, tetanus, pertussis, Hib	GSK (UK)
Trivb	Diphtheria, tetanus, pertussis	Brazil (_____)
Triviraten	Measles, mumps, rubella (live, attenuated)	BER (Switzerland)
Trivivac *	Diphtheria, tetanus, pertussis	MRK (U.S.)
Trivivac Sevac	Measles, mumps, rubella (live, attenuated)	Institute of Sera & Vaccines (Czechoslovakia)
TT	Tetanus toxoid (generic)	AVP (U.S.)
TT vaccine	Tetanus toxoid (adsorbed)	_____ (India)
Tussitrupin Forte	Pertussis	Staatliches Institut (Germany)
Twinrix	Hepatitis A & B (adult formulation)	GSK (U.K., U.S.)
Twinrix Junior	Hepatitis A & B (pediatric formulation)	GSK (U.S.)
Ty21a (Vivotif Berna)	Typhoid (live, oral, lyophilized)	BER (Switzerland)
Tyne	Tuberculosis (BCG)	Sweden
Typherix	Typhoid	GSK (U.K.)
Typhim Vi (ViCPs)	Typhoid (parenteral, injectable)	AVP (U.S., France)
Typhoid Vaccine *	Typhoid (inactivated, parenteral)	WYE (U.S.)
Typhopara-typhoidique	Typhoid and para typhoid	___ (France)
VA-Mengoc-BC	Meningococcal (Groups B & C)	Finlay Vacunas y Sueros Centro de Investigation (Cuba)
Vaccin Difteric Adsorbit	Diphtheria toxoid (adsorbed)	Cantacuzino Institute (Romania)
Vaccin Combinat Diftero-Tetanic	Diphtheria, tetanus (adsorbed)	Cantacuzino Institute (Romania)
Vaccinum Morbillorum Vivum	Measles (live)	Moscow Research Institute (Russia)
Vacina Triplice Viral	Measles, mumps, rubella	_____ (Brazil)
Vacina Triplice	Diphtheria, tetanus, pertussis	Instituto Butantan (Brazil)
Vacina Dupla	Diphtheria, tetanus	Instituto Butantan (Brazil)

* = product no longer distributed in U.S.

Product or Trade name	Antigen(s)	Manufacturer (country)
Vaksin Cacar	Smallpox	___ (Indonesia)
Vaksin Serap	Diphtheria, tetanus, pertussis	Perum Bio Farma (Indonesia)
Vaksin Campak Kerig	Measles (live, attenuated)	Pasteur Institute (Indonesia)
Vaksin Kotipa	Cholera, typhoid and paratyphoid A, B & C	Perum Bio Farma (Indonesia)
Vamoavax	Measles, mumps (live)	Institute of Immunology (Croatia)
Vaqta	Hepatitis A (inactivated)	MRK (U.S.)
Varicellon	Varicella zoster immunoglobulin	Behringwerke Aktiengesellischaft (Germany)
Varie	Smallpox (lyophilized)	Institute of Sera and Vaccine (Czechoslovakia)
Varilrix	Varicella (live, Oka strain)	GSK (Australia, Belgium)
Varivax	Varicella (live)	MRK (U.S.)
Vaxem-Hib	*Haemophilus influenzae* type b	CHIR (Italy)
Vaxicoq	Pertussis (adsorbed)	AVP (France)
Vaxigrip	Influenza	AVP (_____)
Vaxipar	Mumps (live)	CHIR (Italy)
VCDT	Diphtheria, tetanus	Cantacuzino Institute (Romania)
VDA Vaccin Difteric Adsorbit	Diphtheria	Cantacuzino Institute (Romania)
ViCPs (Typhim Vi)	Typhoid (inactivated, injectable)	AVP (U.S.)
VIG	Variola (smallpox) immune globulin (not a vaccine)	Distributed by CDC
Virelon T 20	Polio (live, oral, trivalent)	Behringserke Aktiengesellischaft (Germany)
Virovac Massling, Perotid, Rubella	Measles, mumps, rubella	_____ (Sweden)
Vivotif Berna (Ty21a)	Typhoid (oral, live)	BER (Switzerland)
VT (Vacina Triplice)	Diphtheria, tetanus, pertussis	Instituto Butantan (Brazil)
VTV (Vacina Triplice Viral)	Measles, mumps, rubella	_____ (Brazil)
VVR	Measles (live, attenuated)	Cantucuzino Institute (Romania)
VZIG	Varicella zoster immune globulin (generic)	MA (U.S.)
Welltrivax trivalente	Diphtheria, tetanus, pertussis	_____ (Spain)
YF-VAX	Yellow fever	AVP (U.S.)
Zaantide	Diphtheria anti-toxin	Inst. of Immunology (Croatia)
Zaantite	Tetanus anti-toxin	Inst. of Immunology (Croatia)
Zaditeadvax	Diphtheria, tetanus	Inst. of Immunology (Croatia)
Zaditevax	Diphtheria, tetanus	Inst. of Immunology (Croatia)

* = product no longer distributed in U.S.

Product or Trade name	Antigen(s)	Manufacturer (country)
Zamevax A+C	Meningococcus (polysaccharide, Groups A & C)	Inst. of Immunology (Croatia)
Zamovax	Measles (live)	Inst. of Immunology (Croatia)
Zamruvax	Measles, rubella (live)	Inst. of Immunology (Croatia)
Zaruvax	Rubella (live)	Inst. of Immunology (Croatia)
Zatetravax	Diphtheria, tetanus, pertussis, parapertussis	Inst. of Immunology (Croatia)
Zatevax	Tetanus	Inst. of Immunology (Croatia)
Zatribavax	Diphtheria, tetanus, pertussis	Inst. of Immunology (Croatia)
Zatrivax	Measles, rubella, mumps (live)	Inst. of Immunology (Croatia)

***Abbreviations:** **AVP** = Aventis Pasteur (includes Connaught Laboratories and Pasteur Mérieux Connaught); **BER** = Berna Products Corporation (includes Swiss Serum and Vaccine Institute Berne); **BIK** = The Research Foundation for Microbial Diseases of Osaka University; **BPT** = BioPort (successor entity for Michigan Biologic Products Institute); **CEN** = Centeon L.L.C. (includes Armour Pharmaceutical Company); **CHIR** = Chiron Corporation (includes Sclavo); **EVN** = Evans Medical Limited; **KGC** = Korea Green Cross Corporation; **GSK** = GlaxoSmithKline (includes ...); **MA** = Massachusetts Public Health Biologic Laboratories; **MEDI** = MedImmune (purchased Aviron); **MRK** = Merck & Co., Inc.; **NABI** = Nabi Pharmaceuticals (formerly North American Biologicals, Inc.); **OTC** = Organon Teknika Corporation; **PJP** = PowderJect Pharmaceuticals; **PD** = Parke Davis; **WYE** = Wyeth Pharmaceuticals, (includes Wyeth-Lederle, Wyeth Laboratories, Lederle Laboratories, Praxis Biologics).

Table 2: Translation of Vaccine-Related Terms

The table below lists many of the terms you will find on immunization records of persons born outside of the U.S., along with their translation into English. In most cases, the term refers to the name of a disease against which the person may have been vaccinated. While we have checked and rechecked our sources for this information, we do not claim complete accuracy.

Term	English Translation	Language
(Anti)	(Against) *name of disease*	Multiple languages
Alhasiba	Rubella	Arabic
Antipolio inattivato	IPV	Italian
As'al addeekee	Pertussis	Arabic
Athab	Mumps	Arabic
Bach Hâu	Diphtheria	Vietnamese
Ban Đo	Rubella	Vietnamese
Batok rejan	Pertussis	Malay
Batuk rejan	Pertussis	Indonesian
Beguk	Mumps	Indonesian
Beke	Mumps	Tagalog
Beseže	BCG	Bosnian, Croatian, Serbian
Biring Peluh	Rubella	Indonesian
Błonicy, Bionica	Diphtheria	Polish
BMR	Measles, Mumps, Rubella	Dutch
Bof	Mumps	Dutch
Bornelammelse	Polio	Danish
Bus-buska	Varicella	Somali
Cachumba (papeira)	Mumps	Portuguese
Cagaarshowga A, B	Hepatitis A, B	Somali
Campak	Measles	Indonesian
Chripka	Influenza	Slovak
Cierny kasel	Pertussis	Slovak
Cólera	Cholera	Spanish
Coqueluche	Pertussis	French, Portuguese, Spanish
Cufaa	Tetanus	Oromiffaa (Ethiopia)
Cuno xanuun	Diphtheria	Somali
Dabayl	Poliomyelitis	Somali
Davivy Kasel	Whooping Cough	Czech
Detepe	DTP	Bosnian, Croatian, Serbian

Term	English Translation	Language
Difteeriyaa	Diphtheria	Oromiffaa (Ethiopia)
Difteri	Diphtheria	Swedish, Norwegian, Haitian Creole, Indonesian
Difteria	Diphtheria	Albanian, Arabic, Spanish, Romanian, Portuguese
Diftéria	Diphtheria	Slovak
Difterie	Diphtheria	Czech, Dutch
Difteriei	Diphtheria	Romanian
Difterija	Diphtheria	Bosnian, Croatian, Serbian
Difterite	Diphtheria	Italian
Difteritis	Diphtheria	Danish
(La) Diphtérie	(The) Diphtheria	French
Diphtherie	Diphtheria	German
Dipterya	Diphtheria	Tagalog
Di Te	DT	Romanian
DiTePe	DTP	Slovak
Di-Te-Per	DTP	Romanian
Dječja paraliza	Poliomyelitis	Bosnian, Croatian, Serbian
DKTP	Diphtheria, Tetanus, Pertussis, Inactivated Polio	Dutch
DTC, DT Coq	DTP	French
Duf	Polio	Somali
Duple	Diphtheria, Tetanus	Spanish (Cuba)
Duplex	Diphtheria, Tetanus	Swedish
Dyfteria	Diphtheria	Polish
El Safra	Hepatitis	Arabic
Emofilo b	Hib	Italian
Epatit A, B	Hepatitis A, B	Haitian Creole
Epatite A, B	Hepatitis A, B	Italian
Faaresyge	Mumps	Danish
Febra Galbena	Yellow Fever	Romanian
Fievre jaune	Yellow Fever	French
Flou	Influenza	Haitian Creole
Fruthi	Measles	Albanian
Furuq	Smallpox	Somali

Term	English Translation	Language
Fushin	Rubella	Japanese
Gelekoorts	Yellow Fever	Dutch
Gifira	Measles	Oromiffaa (Ethiopia)
Gifira farangli	Rubella	Oromiffaa (Ethiopia)
Gordelroos	Varicella	Dutch
Gowracato	Diphtheria	Somali
Griep	Influenza	Dutch
(Anti) Gripa	(Against) influenza	Romanian
Gripa	Influenza (flu)	Bosnian, Croatian, Romanian, Serbian
(La) Gripe	(The) influenza	Portuguese, Spanish
Grippe	Influenza	French, German
Gruzlica	Tuberculosis	Polish
Grypa	Influenza	Polish
Gula Febern	Yellow Fever	Swedish
Gurra dhaabsis	Mumps	Oromiffaa (Ethiopia)
Hablobaas	Varicella	Somali
Haemophilus nooca b	*Haemophilus influenzae* type b	Somali
Has 'ba	Measles	Arabic
Hashika	Measles	Japanese
Hashofu	Tetanus	Japanese
Hawb pob	Pertussis	Hmong
Hemófilo tipo b	*Haemophilus influenzae* type b	Spanish
Hepatita A, B	Hepatitis A, B	Romanian
(Anti) Hepatite A, B	(Against) hepatitis A, B	Portuguese
Hepatite A, B	Hepatitis B	French, Portuguese
Hepatitei A, B	Hepatitis A, B	Romanian
Hepatitida	Hepatitis	Czech, Slovak
Hepatitis tipo A, B	Hepatitis A, B	Spanish
Hinkuyska	Pertussis	Finnish
Ho Gà	Pertussis	Vietamese
Holera	Cholera	Romanian
Hri pavac	Pertussis	Serbo-Croatian
Hyakaseki	Pertussis	Japanese
Infilowense	Influenza	Somali
Jadeeco	Measles	Somali

Term	English Translation	Language
Jadeeca Been, Jadeeco Been	Rubella	Somali
Jadeeco jarmalka	Rubella	Somali
Jaykkakouristus	Tetanus	Finnish
Jifuteria	Diphtheria	Japanese
Joonis A	Hepatitis A	Somali
Joonis B	Hepatitis B	Somali
Kabmob siab hom B	Hepatitis B	Hmong
Kašalj hripavac	Pertussis	Croatian
Keuchhusten	Pertussis	German
Kighoste	Pertussis	Danish
Kikhosta	Pertussis	Swedish
Kikhoste	Pertussis	Norwegian
Kinderlähmung	Poliomyelitis	German
Kinderverlamming	Polio	Dutch
Kinkhoest	Pertussis	Dutch
Kix	Pertussis	Somali
Koklich	Pertussis	Haitian Creole
Koklusz	Pertussis	Polish
Kolera	Cholera	Swedish
Kopper	Smallpox	Norwegian
Krzamak	Measles	Slovak
Krztuscowi, Krztusiec	Pertussis	Polish
Kub cer	Diphtheria	Hmong
Kurkkumata	Diphtheria	Finnish
Kusma	Mumps	Norwegian
l'Haemophilus b	*Haemophilus influenzae*, type b	French
Laamsheesaa	Polio	Oromiffaa (Ethiopia)
Lapsihalvaus	Polio	Finnish
Lawoujòl, Laroujòl	Measles	Haitian Creole
Leverbetaendelse	Hepatitis	Danish
Leverbetennelse	Hepatitis	Norwegian
Longontsteking	Pneumonia	Dutch
Male boginje	Rubella	Bosnian, Serbian
Malmouton	Mumps	Haitian Creole
Mami	Mumps	Samoan

Term	English Translation	Language
(Die) Masern	(The) Measles	German
Mässling, Masslingormerly	Measles	Swedish
Mazelen	Measles	Dutch
Meslinger	Measles	Norwegian, Danish
Misela	Measles	Samoan
Morbillo	Measles	Italian
MPR (morbillo, parotote, rosolia)	Measles, Mumps, Rubella	Italian
(La) Numonía	(The) Pneumonia	Spanish
Odra	Measles	Polish
(Les) Oreillons	(The) Mumps	French
Oreion, Oreionului	Mumps	Romanian
Ospa	Smallpox	Polish
Ospice	Measles	Bosnian
Osypky	Measles	Slovak
Otafukukuaze	Mumps	Japanese
Paperas	Mumps	Spanish
Paralisia infantil	Poliomyelitis	Portuguese
Paraliz dzieciecy	Polio	Polish
Parotidite epidémica	Mumps	Portuguese
Parotiditis	Mumps	Spanish
Parotite	Mumps	Italian
Parotitida	Mumps	Czech
Parotitis	Mumps	Slovak
Påssjura	Mumps	Swedish
Penyaakit bengok	Mumps	Malay
Penyakit lumpuh	Polio	Indonesian
Pertosse	Pertussis	Italian
Pertosse acellulare	Acellular Pertussis	Italian
Pertuse	Pertussis	Czech
Pertusis	Pertussis	Tagalog
Pertusisi	Pertussis	Albanian
Pirquet's Reaction	Reaction to TB Skin Test	Multiple
Pljuskavice, Kozice	Varicella	Serbian
Pneumoniei	Pneumonia	Romanian

Term	English Translation	Language
Pocken	Smallpox	German
Podstawowe	Primary	Polish
Pojar German	Rubella	Romanian
Pojarul, Pojarului	Measles	Romanian
Pokken	Smallpox	Dutch
Polio	Polio	Swedish
Poliomielite	Poliomyelitis	Italian, Portuguese
Poliomielitic	Poliomyelitis	Romanian
Poliomielitis	Poliomyelitis	Spanish
Poliomyélite	Polio	French
Poliomyelitis	Polio	Czech
Poliomyelitt	Polio	Norwegian
Polmonite	Pneumonia	Italian
Polyo	Polio	Haitian Creole, Tagalog
Polyomyelitida	Polio	Slovak
Priusnica	Mumps	Slovak
Przypominajace	Booster	Polish
Pulmonía	Pneumonia	Spanish
Qaamow-Qashiir	Mumps	Somali
Qaaxo-Tiibii	Tuberculosis	Somali
Qakkee	Pertussis	Oromiffaa (Ethiopia)
Qanja Barar	Mumps	Somali
Qhua Maj	Rubella	Hmong
Qhua Pias	Measles	Hmong
Qog	Mumps	Hmong
Quai Bi	Mumps	Vietnamese
Radang hati	Hepatitis	Indonesian
Ribeyòl	Rubella	Haitian Creole
Rode hond	Rubella	Dutch
Röda Hund	Rubella	Swedish
Rode Hunde	Rubella	Danish
Røde hunder	Rubella	Norwegian
ROR	Measles, Mumps, Rubella	French
Rosolia	Rubella	Italian
Rötein	Rubella	German
(La) Rougeole	(The) Measles	French

Term	English Translation	Language
Rozyczka	Rubella	Polish
Rubeola	Rubella	Bosnian
Rubéola	Rubella	Spanish
Rúbéola	Rubella	Portuguese
Rubéole	Rubella	French
Rubeolei, Rubeola	Rubella	Romanian
Rujeola, Rujeolei	Measles	Romanian
Rupela	Rubella	Samoan
Ruzienka	Rubella	Slovak
Sài Uon Ván	Tetanus	Vietamese
Sakit champak	Measles	Malay
Sakit rengkong	Diphtheria	Malay
Sambabaha	Pneumonia	Somali
(Anti) Sarampión	(Against) measles	Spanish
Sarampión Aleman	Rubella	Spanish
Sarampión Comun	Measles	Spanish
Sarampo	Measles	Portuguese
Saranpyon	Varicella (Chickenpox)	Haitian Creole
Si rubeolei	Rubella	Romanian
Sikotauti	Mumps	Finnish
Sh niamahi	Polio	Japanese
Shel'el	Polio	Arabic
Shimbiraa	Hepatitis	Oromiffaa (Ethiopia)
Smittkoppor	Smallpox	Swedish
Spalnicky	Measles	Czech
So'i	Measles	Vietnamese
Sot Tê Liêt	Polio	Vietnamese
Starrkramph	Tetanus	German
Stelkramp	Tetanus	Swedish
Stijfkramp	Tetanus	Dutch
Stivkrampe	Tetanus	Danish, Norwegian
Subinuira	Influenza	Czech
Swinka	Mumps	Polish
Tallaakla Qaaxada	BCG	Somali
Taytano	Tetanus	Somali
Tering	Tuberculosis	Dutch

Term	English Translation	Language
Tetánica	Tetanus	Spanish
Tetânica	Tetanus	Portuguese
Tetano	Tetanus	Italian, Tagalog
Tétano	Tetanus	Portuguese, Spanish
Tetanos	Tetanus	Romanian
(Anti) Tétanos (or AT)	(Against) tetanus	Spanish
Tétanos	Tetanus	French
Tetanòs	Tetanus	Haitian Creole
Tetanosul, Tetanosului	Tetanus	Romanian
Tetanozi	Tetanus	Albanian
Tezec, Tężcowi	Tetanus	Polish
Tigdas	Measles	Tagalog
Tos Ferina	Whooping Cough	Spanish
Tosse Asinina	Whooping Cough	Italian
Triplice	DTP	Portuguese
Trippel	Diphtheria, Tetanus, Pertussis	Sweden
Tuag tes tuag taw	Polio	Hmong
Tubercolosi	Tuberculosis	Italian
Tuberculose	Tuberculosis	French
(Die) Tuberkulose	(The) tuberculosis	German
Tuhkarokko	Measles	Finnish
Tuse convulsiva, Tusei convulsive	Pertussis	Romanian
Ua npuag	Tetanus	Hmong
Upala pluća	Pneumonia	Bosnian, Croatian, Serbian
VAHB	Hepatitis B	Portuguese
VAP	Polio	Portuguese
VAS	Measles	Portuguese
VASPR	MMR	Portuguese
VAT	Tetanus	Portuguese
Vaioloso	Smallpox	Italian
Vannkopper	Varicella	Norwegian
(La) Varicela	(The) chickenpox	Spanish
Varicelă, Varicelei	Varicella (chickenpox)	Romanian
Variola, Variolei	Smallpox	Romanian
(La) Variole	(The) Smallpox	French

Term	English Translation	Language
Tetánica	Tetanus	Spanish
Tetânica	Tetanus	Portuguese
Tetano	Tetanus	Italian, Tagalog
Tétano	Tetanus	Portuguese, Spanish
Tetanos	Tetanus	Romanian
(Anti) Tétanos (or AT)	(Against) tetanus	Spanish
Tétanos	Tetanus	French
Tetanòs	Tetanus	Haitian Creole
Tetanosul, Tetanosului	Tetanus	Romanian
Tetanozi	Tetanus	Albanian
Tezec, Tężcowi	Tetanus	Polish
Tigdas	Measles	Tagalog
Tos Ferina	Whooping Cough	Spanish
Tosse Asinina	Whooping Cough	Italian
Triplice	DTP	Portuguese
Trippel	Diphtheria, Tetanus, Pertussis	Sweden
Tuag tes tuag taw	Polio	Hmong
Tubercolosi	Tuberculosis	Italian
Tuberculose	Tuberculosis	French
(Die) Tuberkulose	(The) tuberculosis	German
Tuhkarokko	Measles	Finnish
Tuse convulsiva, Tusei convulsive	Pertussis	Romanian
Ua npuag	Tetanus	Hmong
Upala pluća	Pneumonia	Bosnian, Croatian, Serbian
VAHB	Hepatitis B	Portuguese
VAP	Polio	Portuguese
VAS	Measles	Portuguese
VASPR	MMR	Portuguese
VAT	Tetanus	Portuguese
Vaioloso	Smallpox	Italian
Vannkopper	Varicella	Norwegian
(La) Varicela	(The) chickenpox	Spanish
Varicelă, Varicelei	Varicella (chickenpox)	Romanian
Variola, Variolei	Smallpox	Romanian
(La) Variole	(The) Smallpox	French

Table 3: Vaccine-Related Terms Using Cyrillic Alphabet		
Бцж	BCG	Russian
АКДС	DTP	Russian
Дифтерит, Дифтерия	Diphtheria	Russian
Гемоифлюс инфлюэнцы типа Б	*Haemophilus influenzae* type b	Russian
Гепатит А, В	Hepatitis A, B	Russian
Грипп	Influenza	Russian
Корь	Measles	Russian
Кір	Measles	Ukrainian
Свинка, Паротит	Mumps	Russian
Коклюш	Pertussis	Russian
Воспалс лёгких Пнсвмония	Pneumonia	Russian
Полиомиелит	Polio, Poliomyelitis	Russian
Поліо	Polio	Ukrainian
Краснуха	Rubella	Russian
Оспа	Smallpox	Russian
Столбняк, Столбняка	Tetanus	Russian
Стовбняк	Tetanus	Ukrainian
Туберкулез	Tuberculosis	Russian
Ветрянка	Varicella	Russian
Манту	Mantoux	Russian
Вакцина	Vaccine	Russian
Вакцинация	Series	Russian
Ревакцинация	Booster	Russian

Table 4: Translation of Disease Terms into Indo-European Languages and Somali								
English	**Bosnian**	**Croatian**	**Polish**	**Romanian**	**Russian/Ukrainian**	**Serbian**	**Slovak**	**Somali**
DTP	Detepe	Detepe		Di-Te-Per	АКДС	Detepe	DiTePe	
Diphtheria	Difterija	Difterija	Błonicy, Bionica	Difteria, Difteriei, Diftrie, Anti Difteriei	Дифтерит, Дифтерия	Difterija	Diftéria	Gowracato
Tetanus	Tetanus	Tetanus	Tężcowi, Tezec	Tetanos, Anti Tetanos, Tetanosul	Столбняк Стовбняк (Uk)	Tetanus	Tetanus	Taytano
Pertussis	Veliki kašalj	Kašalj hripavac	Krztuscowi, Krztusiec	Tuse Convulsiva, Tusei Convulsive	Коклюш	Veliki kašalj	Čierny kašeľ	Xiiqdheer
Poliomyelitis	Dječja paraliza	Dječja paraliza	Poliomyelitis	Poliomielita, Poliomielitic, Poliomielitei	Полиомиелит Полио (Uk)	Dečja paraliza	Poliomyelitis	Dabayl
Measles	Rubeola	Ospice	Odra	Pojarul	Корь Кір (Uk)	Krzamak	Morbilli, Osýpky	Jadeeco
Mumps	Zauške	Zaušnjaci	Swinka	Oreionul, Oreion	Свинка, Паротит	Zaušnjaci	Parotitis	Qaamow-Qashiir, Qanja Barar
Rubella	Male boginje	Rubeola		Rubeola, Rubeolei, Pojar German	Краснуха	Male boginje	Rubeola	Jadeeca Been, Jadeeco Been
Haemophilus influenzae b		Haemophilus influenzae b		Hib, Haemophilus Influenzae de tip b	Гемофилюс инфлюзнцы типа Б			Haemophilus nooca b
Hepatitis B	Žutica B, Hepatitis B	Žutica B, Hepatitis B		Hepatita B, Hepatitei B	Гепатит В	Žutica B, Hepatitis B		Cagaarshowga B, Joonis B
Hepatitis A	Žutica A, Hepatitis A	Žutica A, Hepatitis A		Hepatitei A, Hepatita A	Гепатит А	Žutica A, Hepatitis A		Cagaarshowga A, Joonis A
Varicella	Ospice	Vodene kozice		Varicelei, Varicelă	Ветрянка	Pljuskavice, Kozice	Varicella	Bus-buska, Hablobaas
Influenza	Gripa	Gripa	Grypa	Gripal, Gripa	Грипп	Gripa	Chrípka	Infilowense
Pneumonia	Upala pluća	Upala pluća	Zapalenie pluc	Pneumoniei	Воспаление лёгких Пневмония	Upala pluća	Zápal' plüc	Wareento
Smallpox	Veliki boginje	Veliki boginje	Ospa	Variola, Variolei	Оспа	Veliki boginje		Furuq
Tuberculosis	Tuberkuloza	Tuberkuloza	Gruzlica	Tuberculozei	туберкулез	Tuberkuloza	Tuberkulóza	Qaaxo-Tiibii
Mantoux	Manto Test	Manto Test			Манту	Manto Test		
BCG	Beseže	Beseže			Бцж	Beseže		Tallaalka Qaaxada

Table 5: Translation of Disease Terms into Western European Languages

English	French	Dutch	German	Italian	Norwegian	Portuguese	Spanish	Swedish
DTP	DT Coq, DTC	DKTP				Tríplice		Trippel
Diphtheria	Diphtérie	Diphtheria	Diphtherie	Difterite	Difteri	Difteria	Difteria	Difteri
Tetanus	Tétanos	Tetanus	Wundstarrkrampf	Tetano	Stivkrampe	Tétano Tetânica	Tétanos, Tetánica, Tétano	Stelkramp
Pertussis	Coqueluche	Kinkhoest	Keuchhusten	Pertosse	Kikhoste	Coqueluche	Coqueluche	Kikhosta
Whooping Cough				Tosse Asinina			Tos Ferina	
Poliomyelitis	Poliomyélite	Poliomyelitis	Kinderlähmung	Poliomielite	Poliomyelitt	Poliomielite, Paralisia Infantil	Polio/Antipolio, Poliomielitis	Poliomyelitis
MMR	ROR	BMR						
Measles	Rougeole	Mazelen	Masern	Morbillo	Meslinger	Sarampo Rúbéola	Sarampión, Sarampión Comun	Mässling
Mumps	Oreillons	Bof	Zei Genpeter	Parotite	Kusma	Parotidite epidémica, Cachumba	Paperas, Parotiditis	Påssjura
Rubella	- Rubéole - Rubéola	Rode hond	Rötein	Rosolia	Røde hunder	Rúbéola	Rubéola Sarampión Aleman	Röda Hund
Haemophilus influenzae b	l'Haemophilus b	Haemophilus influenzae b	Haemophilus influenzae b	Haemophilus influenzae b	Haemophilus influenzae b	Influenzae Haemophilus tipo B	Hemófilo tipo b, Haemophilus influenzae Tipo B	
Hepatitis B	Hepatite B	Hepatitis B	Hepatitis B	Epatite B		Hepatite B	Hepatitis B	
Hepatitis A	Hepatite A	Hepatitis A	Hepatitis A	Epatite A		Hepatite A	Hepatitis A	
Varicella	Varicella	Gordelroos	Windpocken	Varicella	Vannkopper	Varicela	Varicela	
Influenza	Grippe	Griep	Grippe	Influenzae	Influensa	Gripe	Gripe	Influensa
Pneumonia	Pneumonie	Longontsteking		Polmonite			Pulmonía Numonía	
Smallpox	Variole	Pokken	Pocken	Vaioloso	Kopper		Viruela	Smittkopper
Tuberculosis	Tuberculose	Tering	Tuberkulose	Tubercolosi			Tuberculínica	Tuberkulos

Global Vaccination Information

Past editions of *Epidemiology & Prevention of Vaccine-Preventable Diseases* have included tables showing the routine childhood vaccination schedules for many countries of the world, and information about vaccination coverage in selected countries.

Since this information can quickly become dated, we now refer readers to two very informative pages on the World Health Organization's website:

Statistics and Graphics
(http://www.who.int/vaccines-surveillance/StatsAndGraphs.htm)

This page contains links to slides, maps, tables, and other documents relating to global and national disease incidence, vaccine coverage, and other immunization-related information.

Global Summary "Country Profile Selection Centre"
(http://www-nt.who.int/vaccines/globalsummary/Immunization/CountryProfileSelect.cfm)

On this page the reader can select a country and view an "Immunization Profile" for that country, which includes information on population, disease incidence, vaccine coverage, and the routine schedule.

APPENDIX E

Vaccine Information Statements

Instructions for the Use of

Vaccine Information Statements

Required Use

1. Provide VIS when vaccination is given.

As required under the National Childhood Vaccine Injury Act, all health care providers in the United States who administer any vaccine containing diphtheria, tetanus, pertussis, measles, mumps, rubella, polio, hepatitis B, *Haemophilus influenzae* type b (Hib), varicella (chickenpox), or pneumococcal conjugate vaccine shall **prior to administration of each dose of the vaccine**, provide a copy to keep of the relevant current edition vaccine information materials that have been produced by the Centers for Disease Control and Prevention (CDC):

- to the parent or legal representative* of any child to whom the provider intends to administer such vaccine, or
- to any adult to whom the provider intends to administer such vaccine.

The materials shall be supplemented with visual presentations or oral explanations, as appropriate.

If there is not a single VIS for a combination vaccine (e.g., hepatitis A/hepatitis B), use the VISs for both component vaccines.

* "Legal representative" is defined as a parent or other individual who is qualified under State law to consent to the immunization of a minor.

2. Record information for each VIS provided.

Health care providers shall make a notation in each patient's permanent medical record at the time VISs are provided indicating:
(1) the edition date of the materials, and
(2) the date these materials were provided.

This recordkeeping requirement supplements the requirement of 42 U.S.C. § 300aa-25 that all health care providers administering these vaccines must record in the patient's permanent medical record or in a permanent office log:
(3) the name, address and title of the individual who administers the vaccine,
(4) the date of administration, and
(5) the vaccine manufacturer and lot number of the vaccine used.

Additional Recommended Use

Health care providers may also want to give parents copies of all vaccine information materials prior to the first immunization visit, such as at the first well baby visit.

Applicability of State Law

Health care provides should consult their legal counsel to determine additional State requirements pertaining to immunization. The Federal requirements to provide the vaccine information materials supplement any applicable State laws.

Availability of Copies

Single camera-ready copies of the vaccine information materials are available from State health departments. Copies are also available on the Centers for Disease Control and Prevention's website at http://www.cdc.gov/nip/publications/VIS. Copies are available in English and in other languages.

Current Editions of VISs

Diphtheria, Tetanus, Pertussis (DTaP/DT): 7/30/01
Tetanus Diphtheria (Td): 6/10/94
Measles, Mumps, Rubella (MMR): 1/15/03
Hepatitis B: 7/11/01
Polio: 1/1/00
Haemophilus influenzae type b: 12/16/98
Varicella (chickenpox): 12/16/98
Pneumococcal conjugate: 9/30/02

Reference 42 U.S.C. § 300aa-26

1/15/2003

CDC
SAFER·HEALTHIER·PEOPLE™

Q&A: Vaccine Information Statements

1. What Vaccine Information Statements (VISs) must be used?

The relevant VIS must be provided to the vaccinee (or to the parent or legal representative) for *any vaccine covered by the National Childhood Vaccine Injury Act (NCVIA)*. As of January 2002, these VISs are: **DTaP**, **Td**, **MMR**, **Polio**, **Hepatitis B**, ***Haemophilus influenzae* type b (Hib)**, **Varicella**, and **Pneumococcal conjugate** vaccine. Rotavirus is also covered by the NCVIA, but the vaccine is not in use.

Use of VISs for vaccines not covered by the NCVIA is strongly encouraged. Other VISs that are available are **Hepatitis A**, **Influenza**, **Pneunococcal polysaccharide**, **Lyme disease**, **Anthrax**, **Meningococcal**, and **Smallpox**.

2. What is the difference between VISs, Important Information Statements (IIS's), and Vaccine Information Materials (VIM's)?

Technically, the law designates statements describing vaccines covered by the NCVIA as Vaccine Information Statements. Important Information Statement is a term that was used for these statements in the past, and is still sometimes used to describe statements for vaccines not covered by NCVIA (e.g., hepatitis A, influenza). From 1991 to 1994 multi-page "Vaccine Information Pamphlets" (VIP's) were used for MMR, DTP, Td, and Polio. Vaccine Information Materials is a generic term that has been used to describe any of these statements. For convenience sake, we now use the term VIS for *all* current information statements.

3. How can I tell if the VISs I am using are the most up-to-date versions?

Check the NIP's website at http://www.cdc.gov/nip/publications/VIS/. The VISs posted there will be current.

4. Can providers develop their own vaccine information materials?

All public and private providers who administer the vaccines covered by the NCVIA are required to use the CDC-developed VISs. In 1994, an amendment to the act deleted the language that allowed providers to substitute their own materials for the VISs. However, providers may still *supplement* the VISs with materials of their own.

5. May immunization projects add state or local health department identification to the VISs?

Yes. But any other addition to these documents or variations from their language or format must have the prior written approval of the Director of CDC's National Immunization Program.

6. How are VISs distributed?

Camera-ready copies and explanatory information are sent to all Immunization Projects. The Immunization Projects are responsible for printing and distributing VISs to their public health clinics. They will also be asked to print and distribute single camera-ready copies to all providers who administer vaccine in their state or metro area. Funds have been included in the Immunization Project grants for printing and distribution of the VISs. Some private provider organizations also print and sell copies of the VISs.

The VISs are also available on the internet (see "Where can I get the VISs," below). These are identical to the printed VISs, and may be downloaded and printed out by Immunization Projects or providers and used as camera-ready copy.

7. Must VISs be used for adults as well as for children?

Yes. Under the NCVIA, anyone receiving a covered vaccine should be given the appropriate VIS.

8. Are VISs "informed consent" forms?

No. Informed consent requirements are determined by state law. The VISs were written to fulfill the information requirements of the NCVIA, and are not informed consent documents. However, because the materials cover both benefits and risks associated with vaccinations, they provide enough information that anyone reading them should be adequately informed.

Nevertheless, you should consult your state law to determine if there are any specific "informed consent" requirements relating to immunization. The requirements could include *procedural* requirements (e.g., whether informed consent is required prior to vaccination, whether it may be oral or must be in writing, whether state law requires a signature prior to vaccination) or *substantive* requirements (e.g., the types of information the state would require to be included in any informed consent).

NOTE: VISs must still be used, even if state law requires use of other informed consent materials.

9. What are the recordkeeping requirements regarding VISs?

Health care providers are **not** required to obtain the signature of the patient, parent or legal representative acknowledging receipt of the VISs. However, to document that the VIS was given, health care providers must note in each patient's permanent medical record at the time a VIS is provided: (1) the date printed on the VIS and (2) the date the VIS is given to the vaccine recipient, or the parent or legal representative.

In addition, the NCVIA still requires that health care providers note in the patient's permanent medical record:

(1) the date of administration of the vaccine
(2) the manufacturer and lot number of the vaccine
(3) the name and address of the health care provider administering the vaccine (This should be the address where the record is kept. If immunizations are given in a shopping mall, for example, the address would be the clinic where the permanent record will reside.)

10. What does "legal representative" mean?

A "legal representative" is a parent or other individual who is qualified *under state law* to consent to the immunization of a minor.

11. Must a VIS be given out *every time* a vaccine is administered?

Yes. A VIS must be given out with every vaccination, including each dose of a multi-dose series. This is done for several reasons. The statement might have been updated between visits, or the health status of the child could have changed (*e.g.*, he or she may have an evolving neurological disorder).

12. Must the patient, parent, or legal representative physically take away a copy of each VIS, or is it acceptable to simply let them read a copy and ensure that they understand it?

It is desirable for the person getting the shot or their representative to actually take the VISs home, because they include information that may be needed later (*e.g.*, the recommended schedule for the vaccines, information concerning what to look for and do after the vaccination, and what to do if there is a serious reaction). Even if some patients may elect not to take the VISs home, the provider should offer them the opportunity to do so.

13. How should we comply with the law for patients who are illiterate or blind?

The NCVIA requires providers to supplement the VISs with "visual presentations" or oral "explanations" as needed. If patients are unable to read the VISs, it is up to the provider to ensure that they have the information. VISs can be read to these patients, or videotapes (or other media) can be used as supplements.

14. Are the VISs available in languages other than English?

There are currently no "official" CDC translations of the VISs. Several states have translated them, however, and sharing of translations among states is encouraged. Projects or providers may translate the VISs into other languages. These do not have to be approved by CDC. (See "Where can I get the VISs," below.)

Translations currently exist on the web in Arabic, Armenian, Cambodian, Chinese, Croatian (Serbian), Farsi, French, German, Haitian Creole, Hmong, Ilokano, Japanese, Korean, Laotian, Portugese, Punjabi, Romanian, Russian, Samoan, Serbo-Croatian, Somali, Spanish, Tagalog, Thai, Turkish & Vietnamese.

February 2002

Where can I get the VISs?

ENGLISH

Paper Copies:

- Local health departments, clinics, and practices can get camera-ready copies through your state health department's immunization program.
- State health departments are sent camera-ready copy from CDC whenever a new VIS is published.
- Anyone desiring single copies can get them through CDC's "fax-back" system. Call 1-888-232-3299 and enter document #000002. A Fax-Back directory will be faxed to you, from which you can order VISs (or other NIP documents).

Internet:

- English copies of all current VISs are available as .pdf files on the websites of the National Immunization Program (**http://www.cdc.gov/nip/publications/VIS**), the Immunization Action Coalition (**http://www.immunize.org**), and the Minnesota immunization program (**http://www.health.state.mn.us/divs/dpc/adps/translte.htm**). These can be downloaded and used as camera-ready copy.
- "Vaccine Information Statements: What You Need to Know," a document containing information about VISs and instructions for their use, as well as copies of all VISs (as of October 2001) can be ordered through NIP's online order form at **https://www2.cdc.gov/nchstp_od/PIWeb/NIPorderform.asp** (order document number 99-6194).

Videotapes

- A set of 7 videotapes of VISs is available from the Michigan immunization program through the University of Michigan. The set includes tapes for MMR, DTaP, Polio, Hepatitis B, Hib, Varicella, and Pneumococcal Conjugate vaccines. The tapes run approximately 5-9 minutes each, and a set costs $25. For information, call (517) 353-2596.

OTHER LANGUAGES

Paper Copies:

- Contact the California Immunization Branch at (510) 540-2065 or the Minnesota immunization program at (612) 676-5237.

Internet:

- Most current VISs are available in a variety of languages on the Immunization Action Coalition's website at **http://www.immunize.org** and the Minnesota Department of Health's website at **http://www.health.state.mn.us/divs/dpc/adps/translte/htm**.

Videotapes:

- A set of 7 videotapes of VISs – similar to that described in the "English" section above – is also available in Spanish. As with the English set, the cost is $25. For information, call (517) 353-2596.

February, 2002

APPENDIX F

Vaccine Safety

A Guide to Locating Information on Vaccine Safety
National Immunization Program
March 2002

This publication is presented for information purposes only, and no claims of accuracy are made. Mention of trade names, commercial products, or organizations does not constitute endorsement by the National Immunization Program (NIP) or the Centers for Disease Control and Prevention (CDC). This is not meant to be a comprehensive list of organizations and resources.

Introduction

This guide was produced by the National Immunization Program, part of the Centers for Disease Control and Prevention, to help individuals research issues surrounding vaccine safety. It contains information about government and international agencies and programs, as well as other organizations and selected resources.

This document is divided into four sections:

I. State, Local, and Federal Agencies and Programs

For general information on immunization, vaccine safety, clinics administering vaccines and school-entry requirements, contact your state or local health department.

State health departments on-line: www.cdc.gov/nip. Click on "partners."

Immunization grantees (National Immunization Program) and program managers -- see Appendix H, "Immunization Resources."

National Immunization Program (NIP)
Centers for Disease Control and Prevention (CDC)
1600 Clifton Road, NE, MS E-05
Atlanta, GA 30333
Web site: www.cdc.gov/nip
National Immunization Information Hotline (Monday-Friday, 8:00am-11:00pm EST):
English: (800) 232-2522
Spanish: (800) 232-0233
E-mail: nipinfo@cdc.gov
The National Immunization Program (NIP) of the Centers for Disease Control and Prevention (CDC) provides leadership for the planning, coordination, and implementation of immunization activities nationwide. The program helps monitor the safety and efficacy of vaccines by linking vaccine administration information with adverse event reporting and disease outbreak patterns. Through its toll-free telephone numbers and web site, NIP answers frequently asked questions about vaccines and vaccine safety, provides immunization schedules, and distributes vaccine-related publications.

Vaccine Adverse Event Reporting System (VAERS)
P.O. Box 1100
Rockville, MD 20849-1100
Information Line: (800) 822-7967 (24 hours)
Web site: www.vaers.org
VAERS is a national reporting system jointly administered the CDC and FDA to receive and analyze reports about adverse events that may be associated with vaccines. VAERS encourages the reporting of all clinically significant adverse events following any vaccine, whether or not the vaccine is believed to be the cause of the event. Health care providers, vaccine manufacturers, and consumers can report an adverse event 24 hours a day.

Clinical Immunization Safety Assessment (CISA) Network
National Immunization Program, CDC
Vaccine Safety and Development Branch
Epidemiology and Surveillance Division
1600 Clifton Road, NE
MS E-61
Atlanta, GA 30333
(404) 639-8256
Web site: CISA will have a link on the NIP web site in the near future, www.cdc.gov/nip
The Clinical Immunization Safety Assessment (CISA) Network was initiated in October 2001. Patients who have experienced adverse events following vaccination will be referred to a coordinated network of CISA academic centers to undergo enhanced clinical evaluation. The results of these evaluations will be used to gain a better understanding of the mechanisms underlying these events and to help develop protocols and guidelines for health care providers to help them manage similar situations. CISA centers will also serve as regional information sources to address clinical vaccine safety questions.

Center for Biologics Evaluation and Research (CBER)
Food and Drug Administration (FDA)
1401 Rockville Pike
HSM-40
Rockville, MD 20852
(800) 835-4709 (voice information system)
FAX: (888) CBER-FAX (fax information system)
Web site: www.fda.gov/cber
E-mail: octma@cber.fda.gov
The Center for Biologics and Evaluation Research (CBER) of the Food and Drug Administration (FDA) regulates biological products such as vaccines, blood products, tissue, and related drugs and devices. It maintains a consumer information hotline to answer questions on vaccine safety and regulations and distributes materials such as guidelines and informational letters to manufacturers. CBER's web site contains current vaccine information, including recalls and withdrawals of vaccine products.

Freedom of Information Staff (FOI)
Food and Drug Administration (FDA)
5600 Fishers Lane
HFI-35
Rockville, MD 20857
(301) 827-6567
FAX: (301) 443-1726
Web site: www.fda.gov/foi
Congress passed the National Childhood Vaccine Injury Act of 1986 to help ensure vaccine safety and availability, and to compensate people injured by vaccines. The legislation covers specific vaccines administered routinely during childhood, and ensures that consumers are entitled to information describing specific adverse events that may occur following receipt of these vaccines. Consumers can obtain this information from reports filed with the Vaccine Adverse Events Reporting System (VAERS). However, if more information on specific reports is desired, consumers can file a Freedom of Information Act (FOIA) request using the unique VAERS Report Identification Numbers.

National Vaccine Injury Compensation Program (VICP)
Health Resources and Services Administration (HRSA)
Parklawn Building, Room 8A-35
5600 Fishers Lane
Rockville, MD 20857
(800) 338-2382
FAX: (301) 443-8196
Web site: www.hrsa.gov/osp/vicp
The National Childhood Vaccine Injury Act of 1986 established the National Vaccine Injury Compensation Program (VICP) to compensate those who suffer certain vaccine-related injuries or death, while protecting doctors and manufacturers from lawsuits. Coordinated through the Health Resources and Services Administration (HRSA), the program office distributes an information package detailing criteria for eligibility, how to file a claim, and required documentation.

National Vaccine Program Office (NVPO)
4770 Buford Highway
MS K-77
Atlanta, GA 30341
(770) 488-2040
FAX: (770) 488-2064
Web site: www.cdc.gov/od/nvpo
E-mail: nvpo@cdc.gov
The National Vaccine Program Office (NVPO) was created in 1986 to coordinate and integrate immunization-related activities among all federal agencies, including the Centers for Disease Control and Prevention, the Food and Drug Administration, the National Institutes of Health, and the Health Resources and Services Administration. NVPO also develops and implements strategies designed to increase levels of immunization coverage and decrease levels of adverse reactions to vaccines.

II. International Organizations

Department of Vaccines and Biologicals
World Health Organization (WHO)
Avenue Appia 20
1211 Geneva 27
Switzerland
(+00 41 22) 791 21 11
FAX: (+00 41 22) 791 3111
Web site: www.who.int/vaccines
E-mail: vaccines@who.int
The World Health Organization was founded in 1948 by the United Nations to cooperate with national governments in the strengthening of health programs, technology, and information. The Department of Vaccines and Biologicals was established by WHO with the goal of protecting all people at risk against vaccine-preventable diseases. The program comprises five units: (1) Expanded Programme on Immunization, (2) Vaccine Development, (3) Quality Assurance and Safety of Biologicals, (4) Vaccine Assessment and Monitoring, and (5) Access to Technologies.

Division of Vaccines and Immunization (HVP)
Pan American Health Organization (PAHO)
525 23rd Street, NW
Washington, DC 20037
(202) 974-3000
FAX: (202) 974-3663
Web site: www.paho.org
E-mail: hvp@paho.org
Established in 1902, the Pan American Health Organization is the oldest continuously functioning international public health agency. The Division of Vaccines and Immunization (HVP) was established in 1999 and incorporates the former Special Program for Vaccines and Immunization. The division supports member states in the Region of the Americas by improving policies governing the adoption and delivery of vaccination programs, and by promoting the strengthening, development, and production of high-quality vaccines throughout the Region.

Global Alliance for Vaccines and Immunization (GAVI)
Lisa Jacobs
GAVI Secretariat
c/o UNICEF
Palais des Nations
1211 Geneva 10
Switzerland
41.22.909.50.19
FAX: 41.22.909.59.31
Web site: www.vaccinealliance.org
E-mail: Gavi@unicef.org
GAVI is a coalition of global leaders in immunization including UN organizations, national governments, foundations, NGO's, and the pharmaceutical industry, formed in response to stagnating global immunization rates and widening disparities in vaccine access among industrialized and developing countries.

III. Other Vaccine Safety-Related Organizations/Resources

American Academy of Pediatrics (AAP)
141 Northwest Point Boulevard
Elk Grove Village, IL 60007-1098
(847) 228-5005
FAX: (847) 228-5097
Web site: www.aap.org
E-mail: kidsdoc@aap.org
The American Academy of Pediatrics is an organization of 55,000 pediatricians dedicated to the health, safety and well-being of infants, children, adolescents, and young adults.

American Pharmaceutical Association (APhA)
2215 Constitution Avenue, NW
Washington, DC 20037-2985
(202) 628-4410
FAX: (202) 783-2351
Web site: www.aphanet.org
The American Pharmaceutical Association is an organization of over 50,000 pharmacists and allied health professionals involved in ongoing efforts to improve public health by educating its members and the public about the pharmaceutical profession and its products, including vaccines.

Immunization Action Coalition (IAC)
1573 Selby Avenue
Suite 234
Saint Paul, MN 55104
(651) 647-9009
FAX: (651) 647-9131
Web site: www.immunize.org
E-mail: admin@immunize.org
The Immunization Action Coalition (IAC) is a nonprofit organization that promotes physician, community, and family awareness of, and responsibility for, appropriate immunization of people of all ages against vaccine-preventable diseases. The Hepatitis B Coalition is a program of IAC that promotes hepatitis B vaccination for all infants, children, and adolescents; hepatitis B screening for all pregnant women; testing and vaccination for high-risk groups; and education and treatment for hepatitis B carriers. Semi-annual newsletters containing valuable resources and news are available for both programs.

The Immunization Gateway: Your Vaccine Fact-Finder
Web site: www.immunofacts.com
This site is an online vaccine/immunization fact-finder that links to many of the latest resources on vaccines. It is produced by Facts and Comparisons, a commercial publisher of drug-related information.

Infectious Diseases Society of America (IDSA)
66 Canal Center Plaza
Suite 600
Alexandria, VA 22314
877-341-6644
FAX: (703) 299-0204
Web site: www.idsociety.org
E-mail: info@idsociety.org
The Infectious Diseases Society of America seeks to provide comprehensive information on infectious disease prevention to health care providers and the general public. IDSA sponsors the Vaccine Initiative, which communicates the benefits of routine immunization.

Institute for Vaccine Safety
The Johns Hopkins University
Bloomberg School of Public Health
615 North Wolfe Street
Suite W5515
Baltimore, MD 21207
(410) 955-2955
FAX: (410) 502-6733
Web site: www.vaccinesafety.edu
E-mail: info@vaccinesafety.edu
Established in 1997, the purpose of the Institute for Vaccine Safety is to obtain and distribute objective information on vaccines and vaccine safety to physicians, the general public, decision makers, and the media. It also investigates vaccine safety questions when data are inconclusive and conducts vaccine safety evaluations following vaccine licensure.

National Network for Immunization Information (NNii)
Infectious Diseases Society of America
66 Canal Center Plaza
Suite 600
Alexandria, VA 22314
(877) 341-6644
FAX: (703) 299-0204
Web site: www.immunizationinfo.org
E-mail: nnii@idsociety.org
The National Network for Immunization Information (NNii) provides up-to-date, science-based information about immunization to the public, health professionals, policy makers, and the media to help them understand the issues involved and make informed decisions. NNii is a partnership of the Infectious Diseases Society of America, the Pediatric Infectious Diseases Society of America, the American Academy of Pediatrics, the American Academy of Family Physicians, the American College of Obstetricians and Gynecologists, the American Nurses Association, and the National Association of Pediatric Nurse Practitioners.

National Partnership for Immunization (NPI)
Web site: www.partnersforimmunization.org
A joint program of the National Foundation for Infectious Diseases and the National Healthy Mothers, Healthy Babies Coalition, the National Partnership for Immunization (NPI) seeks to increase national awareness of the importance and acceptance of immunization across the life span through outreach partnerships with public and private organizations. NPI develops educational initiatives and issues reports designed to improve immunization knowledge. NPI recently published a Reference Guide on Vaccines and Vaccine Safety.

Parents of Kids with Infectious Diseases (PKIDS)
P.O. Box 5666
Vancouver, WA 98668
(877) 55-PKIDS
FAX: (360) 695-6941
Web site: www.pkids.org
E-mail: pkids@pkids.org
The goal of Parents of Kids with Infectious Diseases (PKIDS) is to educate the public about infectious diseases, their prevention and transmission, and current medical advances. PKIDS also provides emotional, informational, and financial support to families of affected children and works to reduce the societal stigma associated with those who have infectious diseases.

The Vaccine Education Center at The Children's Hospital of Philadelphia
215-590-9990
Web site: www.vaccine.chop.edu
The Vaccine Education Center at The Children's Hospital of Philadelphia provides current information to parents and health care professionals about how vaccines work and are manufactured, whether vaccines are still necessary, their recommendation process, whether vaccines are safe, and their recommended schedules. The center also provides informational and audiovisual materials and speakers programs.

IV. Selected Vaccine Safety-Related Publications and Products

A. Government Publications

Advisory Committee on Immunization Practices (ACIP) Recommedations
Advisory Committee on Immunization Practices (ACIP)
Division of Epidemiology and Surveillance
National Immunization Program
1600 Clifton Road, NE
MS E-61
Atlanta, GA 30333
(404) 639-8096
FAX: (404) 639-8520
Web site: www.cdc.gov/nip/acip. Click on "recommendations."
E-mail: acip@cdc.gov
The Advisory Committee on Immunization Practices (ACIP) is a committee composed of 15 experts in fields associated with immunization who provide recommendations designed to reduce the incidence of vaccine-preventable diseases and increase the safe usage of vaccines.
ACIP recommendations printed in Morbidity and Mortality Weekly Report (MMWR) can be accessed on-line through the National Immunization Program web site's sub-site for ACIP. In addition, the ACIP sub-site page for "recommendations" has a link to other recent articles about immunization that have been printed in MMWR.

Guide to Contraindications to Childhood Vaccinations
This booklet contains information on contraindication to recommended childhood vaccines. It was developed using information derived from the Standards for Pediatric Immunization Practices, recommendations of the Advisory Committee on Immunization Practices (ACIP), and those of the Committee on Infectious Diseases (Red Book Committee) of the American Academy of Pediatrics (AAP). This publication can be obtained on the NIP web site at www.cdc.gov/nip.

Parents Guide to Childhood Immunization (2001)
This newly revised 94-page booklet, available in English and Spanish, introduces parents to 12 childhood diseases and the vaccines that can prevent them, vaccine safety issues, a glossary of immunization terms, and the current childhood vaccination schedule. This publication can be obtained from the NIP web site at www.cdc.gov/nip.

Six Common Misconceptions About Vaccination and How to Respond to Them (1996)
This booklet discusses six misconceptions about vaccination often cited by parents as reasons they question the need to have their children immunized. Each misconception is refuted based on scientific information and research findings. The misconceptions include the concepts of community immunity, whether there are vaccine "hot lots," vaccine side effects, and whether diseases still exist. This publication can be viewed on the NIP web site at www.cdc.gov/nip.

Vaccine Information Statements
The National Childhood Vaccine Injury Act requires that vaccine information materials be developed for each vaccine covered by the Act. These materials, known as *Vaccine Information Statements*, must be provided by all public and private vaccination providers each time a vaccine is administered. Copies of Vaccine Information Statements are available from state health authorities responsible for immunization, or they can be obtained from CDC's National Immunization Program website at http://www.cdc.gov/nip. Translations of Vaccine Information Statements into languages other than English are available from certain state immunization programs and from the Immunization Action Coalition website at http://www.immunize.org.

Task Force on Safer Childhood Vaccines: Final Report and Recommendations (1998)
National Institute on Allergy and Infectious Diseases (NIAID), NIH
Office of Communications and Public Liaison
Building 31, Room 7A-50
31 Center Drive
MSC 2520
Bethesda, MD 20892-2520
Web site: www.niaid.nih.gov/
A summary of the findings and recommendations of the Task Force on Safer Childhood Vaccines concerning improvements in research, manufacturing, licensing, distribution, administration, testing, and vaccine safety monitoring of childhood vaccines.

Vaccine Safety: What Parents Need to Know (pamphlet)
Michigan Department of Community Health
Information & Education Coordinator
Division of Immunization
4641 Willoughby Road
Holt, MI 48842
1-888-76-SHOTS
Web site: www.hpclearinghouse.org

What If You Don't Immunize Your Child (pamphlet)
California Department of Health Services
Immunization Branch
2151 Berkeley Way
Room 712
Berkeley, CA 94704
(510) 540-2381
FAX: (510) 540-2650
Web site: www.dhs.ca.gov

Plain Talk About Childhood Immunizations (booklet)
This booklet is produced by both the State of Alaska and Seattle, Washington departments of health and is tailored to meet each region's immunization issues.
State of Alaska
Department of Health and Social Services
Section of Epidemiology
Immunization Program
3601 C Street
Suite 540
Anchorage, AK 99503
(907) 269-8000
FAX: (907) 561-0847
Web site: www.epi.hss.state.ak.us/programs/infect/immune.html

Department of Public Health – Seattle & King County
999 Third Avenue
Suite 900
Seattle, WA 98104
(206) 296-4774
FAX: (206) 296-4803
Web site: www.metrokc.gov/health

B. Institute of Medicine (IOM) Reports and Publications

National Academy Press
2101 Constitution Avenue, NW
P.O. Box 285
Washington, DC 20055
(888) 624-8373
FAX: (202) 334-2451
Web site: www.nap.edu

The Institute of Medicine (IOM) was established in 1970 by the National Academy of Sciences. IOM provides objective, timely, authoritative information and advice about health and science policy to government, the private sector, health professions, and the public. IOM established an Immunization Safety Review Committee in 2001 at the request of the Centers for Disease Control and Prevention (CDC) and the National Institutes of Health (NIH) to review existing and emerging immunization safety concerns during the time period 2001-2003.

The reports and publications listed below related to vaccine safety that have been issued by both IOM and its Immunization Safety Review Committee can all be read on-line for free through the web site of the National Academy Press (NAP). Some reports can also be ordered in print form, depending on how recently they were published.

- Immunization Safety Review: Multiple Immunizations and Immune Dysfunction (2002)
- Immunization Safety Review: Thimerosal-Containing Vaccines and Neurodevelopmental Disorders (2001)
- Immunization Safety Review: Measles-Mumps-Rubella Vaccine and Autism (2001)
- CDC Anthrax Vaccine Safety and Efficacy Research Program: Interim Report (2001)
- The Anthrax Vaccine: Is It Safe? Does It Work? (2002)
- An Assessment of the Safety of the Anthrax Vaccine: A Letter Report (2000)
- Vaccine Safety Forum: Summaries of Two Workshops (1997)
- Risk Communication and Vaccination: Workshop Summary (1997)
- Research Strategies for Assessing Adverse Events Associated with Vaccines: A Workshop Summary (1994)
- Adverse Events Associated with Childhood Vaccines: Evidence Bearing on Causality (1993)
- Adverse Effects of Pertussis and Rubella Vaccines (1991)

C. Books and Videos

Immunofacts
Facts and Comparisons, Inc.
St. Louis, MO
(800) 223-0554
FAX: (314) 878-5563
Web site: www.drugfacts.com
This looseleaf-style book contains technical information and a glossary of terms that are updated monthly about indications, product availability, dosage, and safety limits for immunological drugs and vaccines.

Vaccines, 3rd edition (1999)
"Safety of Vaccines" chapter, by Robert T. Chen, M.D.
Authors: Stanley A. Plotkin, M.D., and Walter A. Orenstein, M.D., editors
Elsevier Health Science, Inc.
St. Louis, MO
(800) 545-2522
Web site: www.wbsaunders.com
A comprehensive reference book that describes all vaccines currently in use in addition to those about to be licensed, along with many other issues concerning immunization. Of particular interest are chapters covering vaccine safety, vaccine regulation and testing, immunization law, combined vaccines, and immunizing the immunocompromised.

Vaccines: What Every Parent Should Know (revised edition, 1999)
Authors: Paul A. Offit, M.D., and Louis M. Bell, M.D.
Hungry Minds Publishing, Inc.
New York, NY
(800) 434-3422
Web site: www.hungryminds.com
This book contains information about vaccines routinely administered to children and the diseases they prevent, whether vaccines are still necessary; how vaccines work; when to withhold or delay vaccination; vaccine manufacturing, testing, and recommendation processes; multiple and combination vaccinations; and vaccine safety issues.

Vaccinating Your Child: Questions and Answers for the Concerned Parent (2000)
Authors: Sharon G. Humiston, M.D., and Cynthia Good
Peachtree Publishers, Ltd.
Atlanta, GA
(404) 876-8761
Web site: www.peachtree-online.com
This book contains information about vaccines routinely administered to children and thediseases they prevent, whether vaccines are still necessary; how vaccines work; when to withhold or delay vaccination; vaccine manufacturing, testing, and recommendation processes; multiple and combination vaccinations; and vaccine safety issues.

Vaccines: Separating Fact from Fear
Vaccine Education Center at The Children's Hospital of Philadelphia
215-590-9990
Web site: www.vaccine.chop.edu
This 27 minute videotape was created to provide comprehensive, easy to understand answers to parent's questions about the need for and safety of vaccines.

Immunization Techniques: Safe, Effective, Caring
California Department of Health Services' Immunization Branch
(916) 657-2861
This 35 minute video, produced by the California Department of Health Services' Immunization Branch, includes the latest information on injection techniques for immunizaing children and adults. The video can be ordered from the Immunization Action Coalition web site at www.immunize.org.

National Childhood Vaccine Injury Act

Vaccine Injury Table

Effective August 26, 2002

Vaccine	Adverse Event	Time Interval
I. Tetanus toxoid-containing vaccines (e.g., DTaP, DTP-Hib, DT; Td, or TT)	A. Anaphylaxis or anaphylactic shock [1]	0-4 hours
	B. Brachial neuritis[6]	2-28 days
	C. Any acute complication or sequela (including death) of above events[4]	Not applicable
II. Pertussis antigen-containing vaccines (e.g., DTaP, DTP, DTP-Hib)	A. Anaphylaxis or anaphylactic shock [1]	0-4 hours
	B. Encephalopathy (or encephalitis)[2]	0-72 hours
	C. Any acute complication or sequela (including death) of above events[4]	Not applicable
III. Measles, mumps and rubella virus-containing vaccines in any combination (e.g., MMR, MR, M, R)	A. Anaphylaxis or anaphylactic shock [1]	0-4 hours
	B. Encephalopathy (or encephalitis)[2]	5-15 days
	C. Any acute complication or sequela (including death) of above events[4]	Not applicable
IV. Rubella virus-containing vaccines (e.g., MMR, MR, R)	A. Chronic arthritis[5]	7-42 days
	B. Any acute complication or sequela (including death) of above event[4]	Not applicable
V. Measles virus-containing vaccines (e.g., MMR, MR, M)	A. Thrombocytopenic purpura[7]	7-30 days
	B. Vaccine-Strain Measles Viral Infection in an immunodeficient recipient[8]	0-6 months
	C. Any acute complication or sequela (including death) of above events[4]	Not applicable
VI. Polio live-virus-containing vaccines (OPV)	A. Paralytic polio - in a non-immunodeficient recipient - in an immunodeficient recipient - in a vaccine-associated community case	 0-30 days 0-6 months Not applicable
	B. Vaccine-strain polio viral infection[9] - in a non-immunodeficient recipient - in an immunodeficient recipient - in a vaccine-associated community case	 0-30 days 0-6 months Not applicable
	C. Any acute complication or sequela (including death) of above events[4]	Not applicable
VII. Polio inactivated-virus containing vaccines (e.g., IPV)	A. Anaphylaxis or anaphylactic shock[1]	0-4 hours
	B. Any acute complication or sequela (including death) of above event[4]	Not applicable

Vaccine	Adverse Event	Time Interval
VIII. Hepatitis B antigen-containing vaccines	A. Anaphylaxis or anaphylactic shock[1]	0-4 hours
	B. Any acute complication or sequela (including death) of above event[4]	Not applicable
IX. Haemophilus influenzae type b polysaccharide conjugate vaccines	A. No condition specified for compensation	Not applicable
X. Varicella vaccine	A. No condition specified for compensation	Not applicable
XI. Rotavirus vaccine	A. No condition specified for compensation	Not applicable
XII. Vaccines containing live, oral, rhesus-based rotavirus	A. intussusception	0-30 days
	B. Any acute complication or sequela (including death) of above event[4]	Not applicable
XIII. Pneumococcal conjugate vaccines	A. No condition specified for compensation	Not applicable
XIV. Any new vaccine recommended by the Centers for Disease Control and Prevention for routine administration to children, after publication by Secretary, HHS of a notice of coverage.	A. No condition specified for compensation	Not applicable

Qualifications and Aids to Interpretation

(1) Anaphylaxis and anaphylactic shock mean an acute, severe, and potentially lethal systemic allergic reaction. Most cases resolve without sequelae. Signs and symptoms begin minutes to a few hours after exposure. Death, if it occurs, usually results from airway obstruction caused by laryngeal edema or bronchospasm and may be associated with cardiovascular collapse. Other significant clinical signs and symptoms may include the following: Cyanosis, hypotension, bradycardia, tachycardia, arrhythmia, edema of the pharynx and/or trachea and/or larynx with stridor and dyspnea. Autopsy findings may include acute emphysema which results from lower respiratory tract obstruction, edema of the hypopharynx, epiglottis, larynx, or trachea and minimal findings of eosinophilia in the liver, spleen and lungs. When death occurs within minutes of exposure and without signs of respiratory distress, there may not be significant pathologic findings.

(2) Encephalopathy. For purposes of the Vaccine Injury Table, a vaccine recipient shall be considered to have suffered an encephalopathy only if such recipient manifests, within the applicable period, an injury meeting the description below of an acute encephalopathy, and then a chronic encephalopathy persists in such person for more than 6 months beyond the date of vaccination.

(i) An acute encephalopathy is one that is sufficiently severe so as to require hospitalization (whether or not hospitalization occurred).

(A) For children less than 18 months of age who present without an associated seizure event, an acute encephalopathy is indicated by a "significantly decreased level of consciousness" (see "D" below) lasting for at least 24 hours. Those children less than 18 months of age who present following a seizure shall be viewed as having an acute encephalopathy if their significantly decreased level of consciousness persists beyond 24 hours and cannot be attributed to a postictal state (seizure) or medication.

(B) For adults and children 18 months of age or older, an acute encephalopathy is one that persists for at least 24 hours and characterized by at least two of the following:

(1) A significant change in mental status that is not medication related; specifically a confusional state, or a delirium, or a psychosis;

(2) A significantly decreased level of consciousness, which is independent of a seizure and cannot be attributed to the effects of medication; and

(3) A seizure associated with loss of consciousness.

(C) Increased intracranial pressure may be a clinical feature of acute encephalopathy in any age group.

(D) A "significantly decreased level of consciousness" is indicated by the presence of at least one of the following clinical signs for at least 24 hours or greater (see paragraphs (2)(I)(A) and (2)(I)(B) of this section for applicable timeframes):

(1) Decreased or absent response to environment (responds, if at all, only to loud voice or painful stimuli);

(2) Decreased or absent eye contact (does not fix gaze upon family members or other individuals); or

(3) Inconsistent or absent responses to external stimuli (does not recognize familiar people or things).

(E) The following clinical features alone, or in combination, do not demonstrate an acute encephalopathy or a significant change in either mental status or level of consciousness as described above: Sleepiness, irritability (fussiness), high-pitched and unusual screaming, persistent inconsolable crying, and bulging fontanelle. Seizures in themselves are not sufficient to constitute a diagnosis of encephalopathy. In the absence of other evidence of an acute encephalopathy, seizures shall not be viewed as the first symptom or manifestation of the onset of an acute encephalopathy.

(ii) Chronic encephalopathy occurs when a change in mental or neurologic status, first manifested during the applicable time period, persists for a period of at least 6 months from the date of vaccination. Individuals who return to a normal neurologic state after the acute encephalopathy shall not be presumed to have suffered residual neurologic damage from that event; any subsequent chronic encephalopathy shall not be presumed to be a sequela of the acute encephalopathy. If a preponderance of the evidence indicates that a child's chronic encephalopathy is secondary to genetic, prenatal or perinatal factors, that chronic encephalopathy shall not be considered to be a condition set forth in the Table.

(iii) An encephalopathy shall not be considered to be a condition set forth in the Table if in a proceeding on a petition, it is shown by a preponderance of the evidence that the encephalopathy was caused by an infection, a toxin, a metabolic disturbance, a structural lesion, a genetic disorder or trauma (without regard to whether the cause of the infection, toxin, trauma, metabolic disturbance, structural lesion or genetic disorder is known). If at the time a decision is made on a petition filed under section 2111(b) of the Act for a vaccine-related injury or death, it is not possible to determine the cause by a preponderance of the evidence of an encephalopathy, the encephalopathy shall be considered to be a condition set forth in the Table.

(iv) In determining whether or not an encephalopathy is a condition set forth in the Table, the Court shall consider the entire medical record.

(3) Seizure and convulsion. For purposes of paragraphs (b)(2) of this section, the terms, "seizure" and "convulsion" include myoclonic, generalized tonic-clonic (grand mal), and simple and complex partial seizures. Absence (petit mal) seizures shall not be considered to be a condition set forth in the Table. Jerking movements or staring episodes alone are not necessarily an indication of seizure activity.

(4) Sequela. The term "sequela" means a condition or event which was actually caused by a condition listed in the Vaccine Injury Table.

(5) Chronic Arthritis. For purposes of the Vaccine Injury Table, chronic arthritis may be found in a person with no history in the 3 years prior to vaccination of arthropathy (joint disease) on the basis of:

A) Medical documentation, recorded within 30 days after the onset, of objective signs of acute arthritis (joint swelling) that occurred between 7 and 42 days after a rubella vaccination;

(B) Medical documentation (recorded within 3 years after the onset of acute arthritis) of the persistence of objective signs of intermittent or continuous arthritis for more than 6 months following vaccination;

(C) Medical documentation of an antibody response to the rubella virus.

For purposes of the Vaccine Injury Table, the following shall not be considered as chronic arthritis: Musculoskeletal disorders such as diffuse connective tissue diseases (including but not limited to rheumatoid arthritis, juvenile rheumatoid arthritis, systemic lupus erythematosus, systemic sclerosis, mixed connective tissue disease, polymyositis/dermatomyositis, fibromyalgia, necrotizing vasculitis and vasculopathies and Sjogren's Syndrome), degenerative joint disease, infectious agents other than rubella (whether by direct invasion or as an immune reaction), metabolic and endocrine diseases, trauma, neoplasms, neuropathic disorders, bone and cartilage disorders and arthritis associated with ankylosing spondylitis, psoriasis, inflammatory bowel disease, Reiter's syndrome, or blood disorders.

Arthralgia (joint pain) or stiffness without joint swelling shall not be viewed as chronic arthritis for purposes of the Vaccine Injury Table.

(6) Brachial neuritis is defined as dysfunction limited to the upper extremity nerve plexus (i.e., its trunks, divisions, or cords) without involvement of other peripheral (e.g., nerve roots or a single peripheral nerve) or central (e.g., spinal cord) nervous system structures. A deep, steady, often severe aching pain in the shoulder and upper arm usually heralds onset of the condition. The pain is followed in days or weeks by weakness and atrophy in upper extremity muscle groups. Sensory loss may accompany the motor deficits, but is generally a less notable clinical feature. The neuritis, or plexopathy, may be present on the same side as or the opposite side of the injection; it is sometimes bilateral, affecting both upper extremities. Weakness is required before the diagnosis can be made. Motor, sensory, and reflex findings on physical examination and the results of nerve conduction and electromyographic studies must be consistent in confirming that dysfunction is attributable to the brachial plexus. The condition should thereby be distinguishable from conditions that may give rise to dysfunction of nerve roots (i.e., radiculopathies) and peripheral nerves (i.e., including multiple mononeuropathies), as well as other peripheral and central nervous system structures (e.g., cranial neuropathies and myelopathies).

(7) Thrombocytopenic purpura is defined by a serum platelet count less than 50,000/mm^3. Thrombocytopenic purpura does not include cases of thrombocytopenia associated with other causes such as hypersplenism, autoimmune disorders (including alloantibodies from previous transfusions) myelodysplasias, lymphoproliferative disorders, congenital thrombocytopenia or hemolytic uremic syndrome. This does not include cases of immune (formerly called idiopathic) thrombocytopenic purpura (ITP) that are mediated, for example, by viral or fungal infections,

toxins or drugs. Thrombocytopenic purpura does not include cases of thrombocytopenia associated with disseminated intravascular coagulation, as observed with bacterial and viral infections. Viral infections include, for example, those infections secondary to Epstein Barr virus, cytomegalovirus, hepatitis A and B, rhinovirus, human immunodeficiency virus (HIV), adenovirus, and dengue virus. An antecedent viral infection may be demonstrated by clinical signs and symptoms and need not be confirmed by culture or serologic testing. Bone marrow examination, if performed, must reveal a normal or an increased number of megakaryocytes in an otherwise normal marrow.

(8) Vaccine-strain measles viral infection is defined as a disease caused by the vaccine-strain that should be determined by vaccine-specific monoclonal antibody or polymerase chain reaction tests.

(9)Vaccine-strain polio viral infection is defined as a disease caused by poliovirus that is isolated from the affected tissue and should be determined to be the vaccine-strain by oligonucleotide or polymerase chain reaction. Isolation of poliovirus from the stool is not sufficient to establish a tissue specific infection or disease caused by vaccine-strain poliovirus.

For additional information call our public information line at 1-800-338-2382.

VACCINE ADVERSE EVENT REPORTING SYSTEM
24 Hour Toll Free Information 1-800-822-7967
P.O. Box 1100, Rockville, MD 20849-1100
PATIENT IDENTITY KEPT CONFIDENTIAL

VAERS

For CDC/FDA Use Only
VAERS Number _____
Date Received _____

Patient Name:
Last First M.I.
Address
City State Zip
Telephone no. (____) _____

Vaccine administered by (Name):
Responsible Physician _____
Facility Name/Address
City State Zip
Telephone no. (____) _____

Form completed by (Name):
Relation to Patient ☐ Vaccine Provider ☐ Patient/Parent ☐ Manufacturer ☐ Other
Address *(if different from patient or provider)*
City State Zip
Telephone no. (____) _____

1. State | 2. County where administered | 3. Date of birth mm dd yy | 4. Patient age | 5. Sex ☐ M ☐ F | 6. Date form completed mm dd yy

7. Describe adverse events(s) (symptoms, signs, time course) and treatment, if any

8. Check all appropriate:
☐ Patient died (date mm dd yy)
☐ Life threatening illness
☐ Required emergency room/doctor visit
☐ Required hospitalization (_____days)
☐ Resulted in prolongation of hospitalization
☐ Resulted in permanent disability
☐ None of the above

9. Patient recovered ☐ YES ☐ NO ☐ UNKNOWN

10. Date of vaccination mm dd yy Time _____ AM PM

11. Adverse event onset mm dd yy Time _____ AM PM

12. Relevant diagnostic tests/laboratory data

13. Enter all vaccines given on date listed in no. 10

	Vaccine (type)	Manufacturer	Lot number	Route/Site	No. Previous Doses
a.					
b.					
c.					
d.					

14. Any other vaccinations within 4 weeks prior to the date listed in no. 10

	Vaccine (type)	Manufacturer	Lot number	Route/Site	No. Previous doses	Date given
a.						
b.						

15. Vaccinated at:
☐ Private doctor's office/hospital ☐ Military clinic/hospital
☐ Public health clinic/hospital ☐ Other/unknown

16. Vaccine purchased with:
☐ Private funds ☐ Military funds
☐ Public funds ☐ Other/unknown

17. Other medications

18. Illness at time of vaccination (specify)

19. Pre-existing physician-diagnosed allergies, birth defects, medial conditions(specify)

20. Have you reported this adverse event previously? ☐ No ☐ To health department ☐ To doctor ☐ To manufacturer

Only for children 5 and under
22. Birth weight _____ lb. _____ oz.
23. No. of brother and sisters

21. Adverse event following prior vaccination (check all applicable, specify)

	Adverse Event	Onset Age	Type Vaccine	Dose no. in series
☐ In patient				
☐ In brother or sister				

Only for reports submitted by manufacturer/Immunization project
24. Mfr./imm. proj. report no.
25. Date received by mfr./imm.proj.
26. 15 day report? ☐ Yes ☐ No
27. Report type ☐ Initial ☐ Follow-Up

Health care providers and manufacturers are required by law (42 USC 300aa-25) to report reactions to vaccines listed in the Table of Reportable Events Following Immunization Reports for reactions to other vaccines are voluntary except when required as a condition of immunization grant awards.

Form VAERS-1(FDA)

F

"Fold in thirds, tape & mail - DO NOT STAPLE FORM"

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES
OR APO/FPO

BUSINESS REPLY MAIL
FIRST-CLASS MAIL PERMIT NO. 1895 ROCKVILLE, MD

POSTAGE WILL BE PAID BY ADDRESSEE

VAERS
P.O. Box 1100
Rockville MD 20849-1100

DIRECTIONS FOR COMPLETING FORM

(Additional pages may be attached if more space is needed)

GENERAL

Use a separate form for each patient. Complete the form to the best of your abilities. Items 3, 4, 7, 8, 10, 11, and 13 are considered essential and should be completed whenever possible. Parents/Guardians may need to consult the facility where the vaccine was administered for some of the information (such as manufacturer, lot number or laboratory data.)
Refer to the Reportable Events Table (RET) for events mandated for reporting by law. Reporting for other serious events felt to be related but not on the RET is encouraged.
Health care providers other than the vaccine administrator (VA) treating a patient for a suspected adverse event should notify the VA and provide the information about the adverse event to allow the VA to complete the form to meet the VA's legal responsibility.
These data will be used to increase understanding of adverse events following vaccination and will become part of CDC Privacy Act System 09-20-0136, "Epidemiologic Studies and Surveillance of Disease Problems". Information identifying the person who received the vaccine orthat person's legal representativewill not be made available tothe public, but may be available to the vaccinee or legal representative.
Postage will be paid by addressee. Forms may be photocopied (must be front & back on same sheet).

SPECIFIC INSTRUCTIONS

Form Completed By: To be used by parents/guardians, vaccine manufacturers/distributors, vaccine administrators, and/or the person completing the form on behalf of the patient or the health professional who administered the vaccine.

Item 7: Describe the suspected adverse event. Such things as temperature, local and general signs and symptoms, time course, duration of symptoms diagnosis, treatment and recovery should be noted.
Item 9: Check "YES" if the patient's health condition is the same as it was prior to the vaccine, "NO" if the patient has not returned to the pre-vaccination state of health, or "UNKNOWN" if the patient's condition is not known.
Item 10: Give dates and times as specifically as you can remember. If you do not know the exact time, please
Item 11: indicate "AM" or "PM" when possible if this information is known. If more than one adverse event, give the onset date and time for the most serious event.
Item 12: Include "negative" or "normal" results of any relevant tests performed as well as abnormal findings.
Item 13: List ONLY those vaccines given on the day listed in Item 10.
Item 14: List any other vaccines that the patient received within 4 weeks prior to the date listed in Item 10.
Item 16: This section refers to how the person who gave the vaccine purchased it, not to the patient's insurance.
Item 17: List any prescription or non-prescription medications the patient was taking when the vaccine(s) was given.
Item 18: List any short term illnesses the patient had on the date the vaccine(s) was given (i.e., cold, flu, ear infection).
Item 19: List any pre-existing physician-diagnosed allergies, birth defects, medical conditions (including developmental and/or neurologic disorders) for the patient.
Item 21: List any suspected adverse events the patient, or the patient's brothers or sisters, may have had to previous vaccinations. If more than one brother or sister, or if the patient has reacted to more than one priorvaccine, use additional pages to explain completely. For the onset age of a patient, provide the age in months if less than two years old.
Item 26: This space is for manufacturers' use only.

APPENDIX G

Vaccine Administration

Vaccine Administration

Appropriate vaccine administration is critical to vaccine effectiveness. The recommended site, route and dosage for each vaccine is based on clinical trials, practical experience and theoretical considerations. The following information provides general guidelines for administration of vaccines for those who administer vaccines, as well as those in training, education and supervisory positions. This information should be used in conjunction with professional standards for medication administration, vaccine manufacturers' product guidelines, Centers for Disease Control and Prevention's (CDC) Advisory Committee on Immunization Practices (ACIP) General Recommendations on Immunization, the American Academy of Pediatrics' (AAP) Report of the Committee on Infectious Diseases Red Book and state/agency-related policies and procedures. An education plan that includes competency-based training on vaccine administration should be considered for all persons who administer vaccines to children and/or adults (refer to "Skills Checklist for Pediatric Immunization" – page G13).

Preparation

- **Patient Preparation** - Patients should be prepared for vaccination with consideration for their age and stage of development. Parents/guardians and patients should be encouraged to take an active role before, during and after the administration of vaccines (refer to "Be there for your child during shots" – page G15). Parents/guardians who elect not to directly participate during vaccine administration can wait in a nearby area.

  - **Screening** - All patients should be screened for contraindications and precautions for each scheduled vaccine. Many state immunization programs and other organizations have developed and make available standardized screening tools. Basic screening questions can be found in Chapter 2. Sample screening forms for children and adults are included in Appendix A

  - **Vaccine Safety & Risk Communication** - Parents/guardians and patients are exposed through the media to information about vaccines, some of which is inaccurate or misleading. Health-care providers should be prepared to discuss the benefits and risks of vaccines using Vaccine Information Statements (VIS) and other reliable resources. Establishing an open dialogue provides a safe, trust-building environment in which individuals can freely evaluate information, discuss vaccine concerns and make informed decisions regarding immunization (refer to Chapter 17 and Appendix F).

  - **Atraumatic Care** - Vaccine safety issues and the need for multiple injections have increased the concerns and anxiety associated with immunizations. Health-care providers need to display confidence and establish an environment that promotes a sense of security and trust for the patient and family, utilizing a variety of techniques to minimize the stress and discomfort associated with receiving injections. This is particularly important when administering vaccines to children.

    - **Positioning & Comforting Restraint** - The health-care provider must accommodate for the patient's comfort, safety, age, activity level, and the site of administration when considering patient positioning and restraint. For a child, the parent/guardian should be encouraged to hold the child during administration. If the parent is uncomfortable, another person may assist or the patient may be positioned safely on an examination table (refer to "Comforting Restraint for Immunizations" – page G17).

- **Pain Control** - Pain is a subjective phenomenon influenced by multiple factors, including an individual's age, anxiety level, previous health-care experiences, and culture. Consideration for these factors is important as the provider develops a planned approach to management of injection pain (see page G15).

  ✓ **Topical Anesthetics** or a vapocoolant spray may be prescribed pre-vaccination to decrease pain at the injection site. These products should be used only for the ages recommended and as directed by the product manufacturer.

  ✓ **Analgesic Agents** - A non-aspirin-containing pain reliever may be considered to decrease discomfort and fever following vaccination. These products should be used only in age-appropriate doses (refer to "After the shots. . ." in Appendix A).

  ✓ **Diversionary Techniques** - Age-appropriate non-pharmacologic techniques may provide distraction from pain associated with injections. Diversion can be accomplished through a variety of techniques, some of which are outlined on pages G15-16.

  ✓ **Dual Administrators** - Some providers favor the technique of two individuals simultaneously administering vaccines at separate sites. The premise is that this procedure may decrease anxiety from anticipation of the next injection(s). The effectiveness of this procedure in decreasing pain or stress associated with vaccine injections has not been widely evaluated.

- **Infection Control** - Health-care providers should follow Standard Precautions to minimize the risks of spreading disease during vaccine administration.

  - **Handwashing** - The single, most effective disease prevention activity is good handwashing. Hands should be washed thoroughly with soap and water or cleansed with an alcohol-based waterless antiseptic between patients, before vaccine preparation or any time hands become soiled, e.g. diapering, cleaning excreta, etc.

  - **Gloving** - Gloves are not mandatory for vaccine administration unless there is potential for exposure to blood or body fluids or the provider has open lesions on the hands. It is important to remember that gloves cannot prevent needle stick injuries.

  - **Needle Stick Injuries** should be reported immediately to the site supervisor with appropriate care and follow-up given as directed by state/local guidelines.

  - **Equipment Disposal** - *Used needles should not be detached from syringes, recapped or cut before disposal. All used syringe/needle devices should be placed in puncture proof containers to prevent accidental needle sticks and reuse.* Empty or expired vaccine vials are considered medical waste and should be disposed of according to state regulations.

- **Vaccine Preparation** - Proper vaccine handling and preparation is critical in maintaining the integrity of the vaccine during transfer from the manufacturer's vial to the syringe and ultimately to the patient.

- **Equipment Selection**

  - **Syringe Selection** - A separate needle and syringe should be used for each injection. A parenteral vaccine may be delivered in either a 1 mL. or 3 mL. syringe as long as the prescribed dosage is delivered. Syringe devices and sharps with engineered sharps injury protection (SESIP) are available, recommended by OSHA and required in many states to reduce the incidence of needle stick injuries and potential disease transmission. Personnel should be involved in product evaluation and selection. Prior to use in the clinical area, staff should receive training with the device.

  - **Needle Selection** - Vaccine must reach the desired tissue site for optimal immune response. Therefore, needle selection should be based upon the prescribed route, size of the individual, and viscosity of the vaccine (See Subcutaneous & Intramuscular Injections below). Typically vaccines are not highly viscous, and therefore, a fine gauge needle can be used (22-25 gauge).

  - **Needle-free Injection** - A new generation of needle-free vaccine delivery devices has been developed in an effort to decrease the risks of needle stick injuries to health-care workers and to prevent improper reuse of syringes and needles. For more information on needle-free injection technology consult the CDC website, www.cdc.gov/nip/dev/jetinject.htm.

- **Inspecting Vaccine** - Each vaccine vial should be carefully inspected for damage or contamination prior to use. The expiration date printed on the vial or box should be checked. Vaccine can be used through the last day of the month indicated by the expiration date. Vaccine past its expiration date should never be used.

- **Reconstitution** - Some vaccines are prepared in a lyophilized form that requires reconstitution, which should be done according to manufacturer guidelines. Diluent solutions vary; only the specific diluent supplied for the vaccine should be used. Once the vaccine vial is uncapped, clean the rubber stopper of the vial with an alcohol wipe and allow to dry. Inject the entire content of the diluent vial into the vial of lyophilized vaccine and agitate to ensure thorough mixing. Once reconstituted, the vaccine must be administered within the time guidelines provided by the manufacturer or discarded. Changing the needle after reconstitution of the vaccine is not necessary unless the needle has become contaminated or bent. Continue with steps for filling the syringe.

- **Filling the Syringe** -

  - For vaccines that do not require reconstitution, uncap the vaccine vial, clean the rubber stopper of the vial with an alcohol wipe and allow to dry.

  - If possible, tighten the needle on the syringe.

  - Pull back on the plunger to fill the syringe with an amount of air equal to the amount of vaccine to be withdrawn.

  - Remove the needle guard and place the guard where it will not become contaminated.

  - With the vial upright, insert the needle directly into the center of the rubber stopper.

- Inject the air into the vial, keeping the bevel of the needle above the level of the vaccine to avoid producing air bubbles in the vaccine. The injected air will create positive pressure in the vial and allow removal of the vaccine without creating a vacuum.

- Invert the vial and withdraw the vaccine keeping the bevel of the needle within the solution to avoid drawing air into the syringe. For single dose vials, withdraw the entire vial contents. For multidose vials, withdraw the desired vaccine dose.

- Remove the vial and expel any air bubbles or excess air from the syringe by gently tapping the side of the syringe and advancing the plunger. Do not expel any of the vaccine.

- Recap the needle. Since the needle has not been injected into the patient, recapping at this point is allowable.

- **Prefilling Syringes** - The National Immunization Program strongly discourages filling syringes in advance because of the increased risks for administration errors. Once in the syringe, it is difficult to tell which vaccine is which. Other problems associated with this practice are vaccine wastage, and possible bacterial growth in vaccines that do not contain a preservative. Furthermore, medication administration guidelines state that individuals should draw up and prepare any medications they will administer. An alternative to the practice of prefilling syringes is to use filled syringes supplied by the vaccine manufacturer. Syringes other than those filled by the manufacturer are designed for immediate administration, not for vaccine storage.

  However, if you have a reason to reconstitute more than one dose of vaccine, perhaps for a large influenza clinic, you should only prefill a few syringes at a time, which you can administer while someone else is prefilling a few syringes they will administer. Any syringes left at the end of the clinic day *should be discarded*.

  Under NO CIRCUMSTANCES should MMR or varicella vaccine ever be reconstituted and drawn prior to the immediate need for the vaccines. These live virus vaccines are unstable and begin to deteriorate as soon as they are reconstituted with diluent.

- **Labeling** - Once vaccines are drawn up, filled syringes should be identifiable in terms of the vaccine or antigen(s) in the syringe(s). There are a variety of methods for identifying or labeling syringes (e.g., keep syringes with the appropriate vaccine vials, place the syringes in a labeled partitioned tray, or use color coded labels or preprinted labels). Some providers may choose to include the lot number and date of filling on the identification.

Administration

- **Route** - Administering a vaccine by the recommended route is imperative. Delivering the vaccine into the appropriate tissue promotes optimal vaccine efficacy and diminishes the risk of severe local adverse reactions.

Administering Vaccines: Dose, Route, Site, and Needle Size

Vaccines	Dose	Route	Site	Needle Size
Diphtheria, Tetanus, Pertussis (DTaP, DT, Td)	0.5 mL	IM	**Vastus lateralis:** for infants (& toddlers lacking adequate deltoid mass); **Deltoid:** for toddlers, children & adults	22–25g, 1–2"
***Haemophilus influenzae* type b (Hib)**	0.5 mL	IM	**Vastus lateralis:** for infants (& toddlers lacking adequate deltoid mass); **Deltoid:** for toddlers & children	22–25g, 1–2"
Hepatitis A (HepA)	≤18 yrs.: 0.5 mL ≥19 yrs.: 1.0 mL	IM	**Vastus lateralis:** for infants (& toddlers lacking adequate deltoid mass); **Deltoid:** for toddlers, children & adults	22–25g, 1–2"
Hepatitis B (HepB)	≤19 yrs.: 0.5 mL* ≥20 yrs.: 1.0 mL	IM	**Vastus lateralis:** for infants (& toddlers lacking adequate deltoid mass); **Deltoid:** for toddlers, children & adults	22–25g, 1–2"
Influenza, live attenuated (LAIV)	0.5 mL	Intranasal spray	Administer 0.25 mL dose into each nostril while patient is in an upright position	NA
Influenza, trivalent inactivated (TIV)	6-35 mos: 0.25 mL ≥3 yrs.: 0.5 mL	IM	**Vastus lateralis:** for infants (& toddlers lacking adequate deltoid mass); **Deltoid:** for toddlers, children & adults	22–25g, 1–2"
Measles, mumps, rubella (MMR)	0.5 mL	SC	**Anterolateral fat of thigh:** for young children **Posterolateral fat of upper arm:** for children & adults	23–25g, 5/8"
Meningococcal (Men)	0.5 mL	SC	**Anterolateral fat of thigh:** for young children **Posterolateral fat of upper arm:** for children & adults	23–25g, 5/8"
Pneumococcal conjugate (PCV)	0.5 mL	IM	**Vastus lateralis:** for infants (& toddlers lacking adequate deltoid mass); **Deltoid:** for toddlers & children	22–25g, 1–2"
Pneumococcal polysaccharide (PPV)	0.5 mL	IM	**Deltoid**	22–25g, 1–2"
		SC	**Anterolateral fat of thigh:** for young children **Posterolateral fat of upper arm:** for children & adults	23–25g, 5/8"
Polio, inactivated (IPV)	0.5 mL	IM	**Vastus lateralis:** for infants (& toddlers lacking adequate deltoid mass); **Deltoid:** for toddlers, children & adults	22–25g, 1-2"
		SC	**Anterolateral fat of thigh:** for infants & young children **Posterolateral fat of upper arm:** for children & adults	23–25g, 5/8"
Varicella (Var)	0.5 mL	SC	**Anterolateral fat of thigh:** for young children **Posterolateral fat of upper arm:** for children & adults	23–25g, 5/8"

*Persons 11 through 15 years of age may be given Recombivax HB® (Merck) 1.0 mL (adult formulation) on a 2–dose schedule.

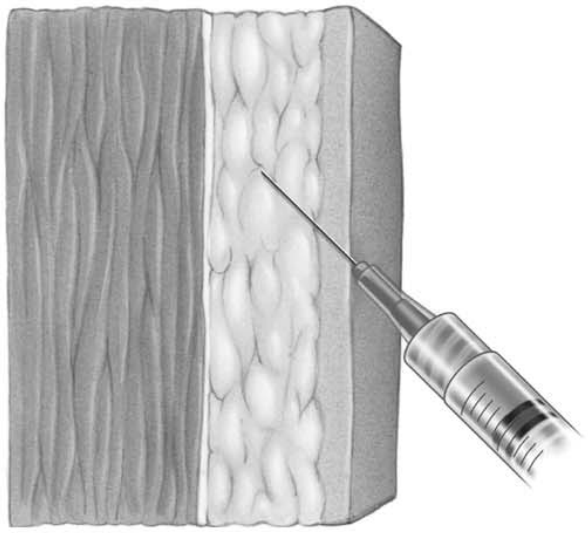
Combination Vaccines

DTaP+HepB+IPV (Pediarix™) **DTaP+Hib (Trihibit™)** **Hib+HepB (Comvax™)**	0.5 mL	IM	**Vastus lateralis:** for infants (& toddlers lacking adequate deltoid mass); **Deltoid:** for toddlers & children	22–25g, 1–2"
HepA+HepB (Twinrix®)	≥18 yrs.: 1.0 mL	IM	**Deltoid**	22–25g, 1–2"

Please note: Always refer to the package insert included with each biologic for complete vaccine administration information. The Advisory Committee on Immunization Practices (ACIP) statement for the particular vaccine should be reviewed as well.

www.immunize.org/catg.d/p3085.pdf • Item #P3085 (11/03)

- **Subcutaneous** (SC) injections are administered into the fatty tissue found below the dermis and above muscle tissue.



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- **Site** - SC tissue can be found all over the body. The usual SC sites for vaccine administration are the thigh and the upper outer triceps of the arm. If necessary, the upper outer triceps area can be used to administer SC injections to infants.

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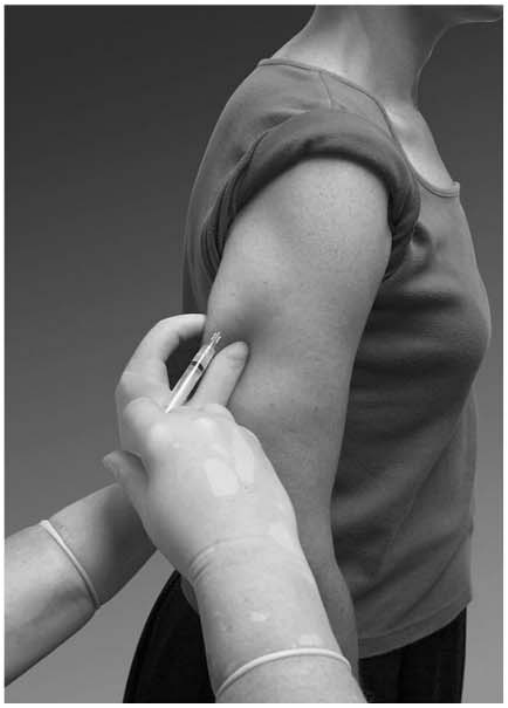
- **Needle Gauge & Length** - 5/8-inch, 23- to 25-gauge needle

- **Technique**

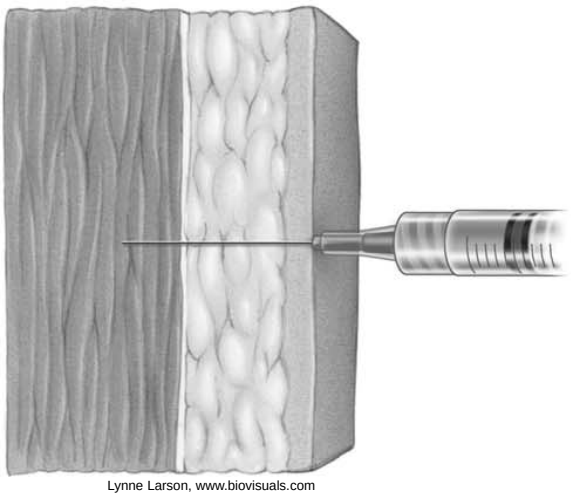
  ✓ Following appropriate site assessment/selection, prep the injection site with an alcohol wipe. Using a circular motion, wipe from the center out and allow to dry.

  ✓ To avoid reaching the muscle, the fatty tissue is pinched up, the needle is inserted at a 45 degree angle and the vaccine is injected into the tissue.

  ✓ Withdraw the needle and apply light pressure to the injection site for several seconds with a dry cotton ball/gauze.



- **Intramuscular** (IM) injections are administered into muscle tissue below the dermis and SC tissue.



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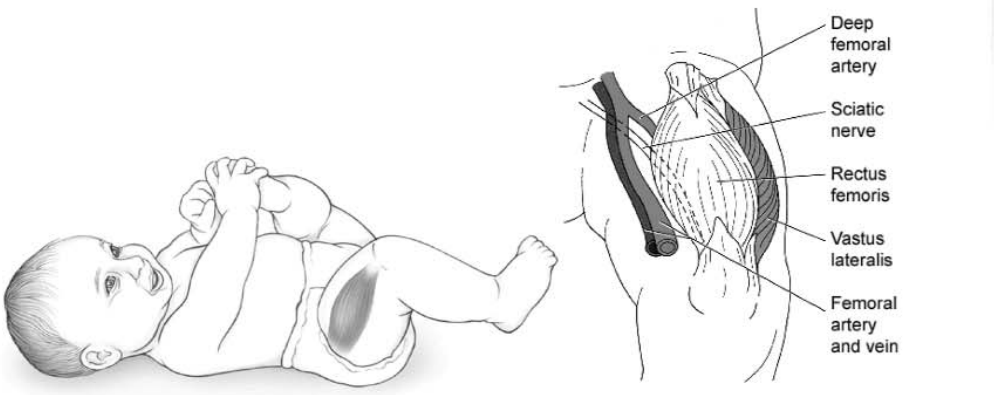
- **Site** - Although there are several IM injection sites on the body, the recommended IM sites for vaccine administration are the vastus lateralis muscle (anterolateral thigh) and the deltoid muscle (upper arm). The site depends on the age of the individual and the degree of muscle development.



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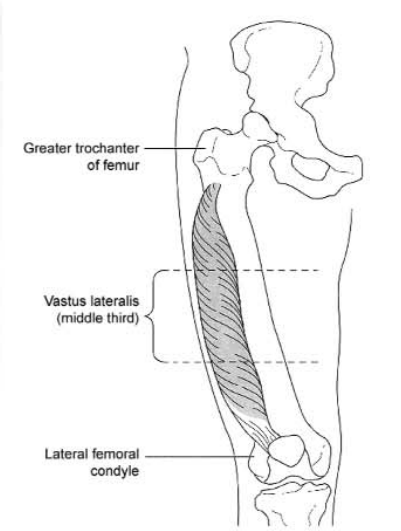
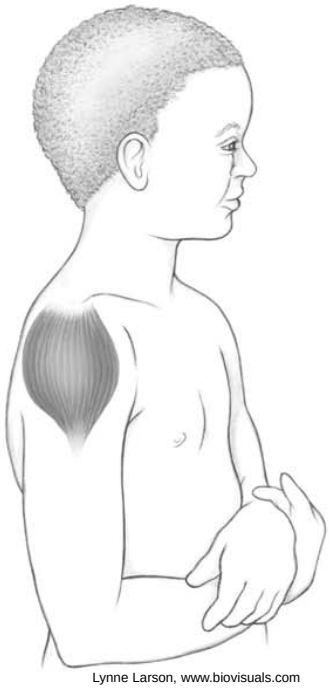
The vastus lateralis muscle of the upper thigh used for intramuscular injections.



The vastus lateralis site of the right thigh, used for an intramuscular injection.

The deltoid muscle site is most commonly used in older children and adults. The deltoid muscle can be used in toddlers if the muscle mass is adequate. The buttock should never be used to administer vaccines.



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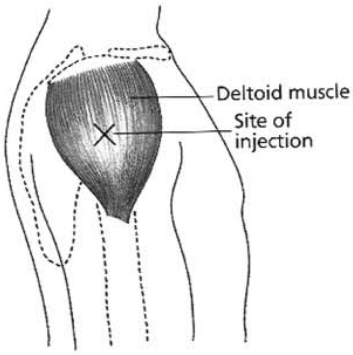


- **Needle Gauge** - 22- to 25-gauge needle
  - **Needle Length** - The needle length must be adequate to reach the muscle and is based on the size of the individual. Following are the typical lengths for various ages.

    Infant - 7/8- to 1-inch

    Toddler & older children - 7/8- to 1 1/4-inch

    Adults - 1- to 1 ½-inch

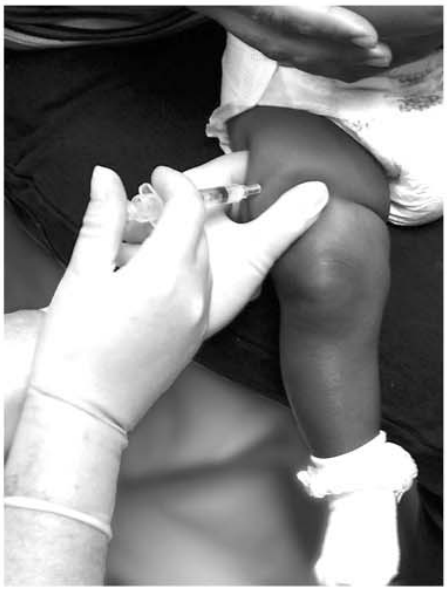
  - **Technique** -

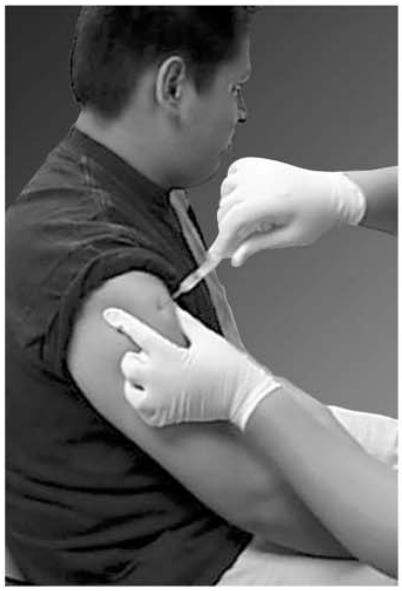
    ✓ Following appropriate site assessment/selection, prep the injection site with an alcohol wipe. Using a circular motion, wipe from the center out and allow to dry.

    ✓ To avoid injection into SC tissue, the skin of the selected vaccine administration site can be spread taut between the thumb and forefinger, isolating the muscle. Another technique, acceptable mostly for pediatric and geriatric patients, is to grasp the tissue and "bunch up" the muscle.

    ✓ Insert the needle fully into the muscle at a 90 degree angle and inject the vaccine into the tissue.

    ✓ Withdraw the needle and apply light pressure to the injection site for several seconds with a dry cotton ball/gauze.





- **Aspiration** - Aspiration is the process of pulling back on the plunger of the syringe prior to injection to ensure that the medication is not injected into a blood vessel. Although this practice is advocated by some experts, there is no research data documented to support the need for this procedure. If blood appears following aspiration, the needle should be withdrawn, a new site selected and the entire administration process restarted.

- **Multiple Vaccinations** - When administering multiple vaccines, NEVER mix vaccines in the same syringe unless approved for mixing by the Food and Drug Administration (FDA). If more than one vaccine must be administered in the same limb, the injection sites should be separated by 1-2 inches so that any local reactions can be differentiated. Vaccine doses range from 0.5 mL. to 1 mL. The recommended maximum volume of medication for an IM site, varies among references and depends on the muscle mass of the individual. However, administering two IM vaccines into the same muscle would not exceed any suggested volume ranges for either the vastus lateralis or the deltoid muscle in any age group. The option to also administer a SC vaccine into the same limb, if necessary, is acceptable since a different tissue site is involved.

- **Nonstandard Administration** - Deviation from the recommended route, site and dosage of vaccine is strongly discouraged and can result in inadequate protection. In situations where nonstandard administration has occurred, refer to the ACIP General Recommendation on Immunization, MMWR 2002; 51 (RR-2), for specific guidance.

Special Situations

- **Bleeding Disorders** - Individuals with a bleeding disorder or who are receiving anticoagulation therapy may develop hematomas in IM injection sites. Prior to administration of IM vaccines the patient or family should be instructed about the risk of hematoma formation from the injection. Additionally, a physician familiar with the patient's bleeding disorder or therapy should be consulted regarding the safety of administration by this route. If the patient periodically receives hemophilia replacement factor or other similar therapy, IM vaccine administration should ideally be scheduled shortly after replacement therapy. A 23-gauge or finer needle should be used and firm pressure applied to the site for at least two minutes. The site should not be rubbed or massaged.

- **Latex Allergy** - Administration of a vaccine supplied in a vial or syringe that contains natural rubber (refer to product information) should not be administered to an individual with a history of a severe (anaphylactic) allergy to latex, unless the benefit of vaccination clearly outweighs the risk of an allergic reaction. These situations are rare. Medical consultation and direction should be sought regarding vaccination. A local or contact sensitivity to latex is not a contraindication to vaccination.

- **Limited Sites** - Sometimes vaccination sites may be limited in an individual because of amputation, injury, orthopedic device or cast, etc. It may be necessary to consult the patient's primary health-care provider to develop an individualized immunization schedule.

- **Syncopal or vasovagal response** ("fainting") may occur during vaccine administration, especially with adolescents and adults. Because individuals may fall and sustain injury as a result, the provider may consider having the patient sit during injection(s). A syncopal or vasovagal response is not an allergic reaction, however, the provider should observe and administer supportive care until the patient is recovered.

- **Anaphylaxis** (a life-threatening acute allergic reaction) - Each facility that administers vaccines should have a protocol, procedures and equipment to provide initial care for suspected anaphylaxis. Facility staff should be prepared to recognize and respond appropriately to this type of emergency situation. All staff should maintain current CPR certification. Emergency protocols, procedures and equipment/supplies should be reviewed periodically. For detailed information on medical management, refer to the ACIP General Recommendations on Immunization and AAP Red Book. Although both fainting and allergic reactions are rare, some experts suggest observing patients for 15-20 minutes following vaccine administration.

Documentation - All vaccine administration should be fully documented in the patient's permanent medical record to include:

1. Date of administration
2. Name or common abbreviation of vaccine
3. Vaccine lot number
4. Vaccine manufacturer
5. Administration site
6. Vaccine Information Statement (VIS) edition date (found either in the lower left or lower right corner of the VIS).
7. Name and address of vaccine administrator (This should be the address where the record is kept. If immunizations are given in a shopping mall, for example, the address would be the clinic where the permanent record will reside).

Facilities that administer vaccines are encouraged to participate in state/local vaccine registries. The patient or parent should be provided with an immunization record that includes the vaccines administered with dates of administration.

The California Department of Health Services' Immunization Branch has developed a complete package of resources on vaccine administration, including a training video, posters and a skills checklist. Ordering information is available on the Immunization Action Coalition (IAC) website, http://www.immunize.org/iztech/index.htm.

IMM-694 (12/11/00)

Skills Checklist for Pediatric Immunization

Goal: To assure clinical staff has the skills and competencies needed for safe, effective and caring administration of pediatric immunizations.

Purpose: The Skills Checklist can be used for self-assessment or for annual performance reviews by physician or supervisor. It also can be used for new employees, to identify what they will need in orientation and what knowledge or skills they should attain during their probationary period.

Instructions: Prior to annual review, staff should score themselves (self-assessment) on the items below. After their self-assessment, the medical director or supervisor should observe their skills and techniques with several patients. Score by checking in the appropriate column. Discuss in private any scoring differences and recommend a plan of action for any scores of **"Needs Review"**.

Scoring:

Needs Review: Needs improvement. Institute a corrective plan of action to develop appropriate skills level. Review again in 30 days, followed by 3 months review if needed.
Meets or Exceeds: Demonstrates competencies and skills required for safe, effective and caring pediatric immunization administration. File in personnel folder. Review again at end of probationary period and annually thereafter.

		Self Assessment		Supervisor Review		
Competency	**Clinical Skills, Techniques, and Procedures**	**Needs Review**	**Meets or Exceeds**	**Needs Review**	**Meets or Exceeds**	**Plan of Action***
A. Parent Education	1. Welcomes child and family, establishes rapport, and answers parents questions.					
	2. Explains what vaccines will be given and which type(s) of injection will be done.					
	3. Accommodates language or literacy barriers and special needs of parents to help make them feel comfortable and informed about the procedure.					
	4. Verifies parents received the Vaccine Information Statements for all vaccines the child is to receive and had time to read them and ask questions.					
	5. Screens for contraindications. (MA: score NA–not applicable–if this is MD function.)					
	6. Reviews comfort measures and after care instructions with parent, inviting questions.					
B. Medical Protocols	1. Identifies the location of the medical protocols (i.e. immunization protocol, emergency protocol, reference material).					
	2. Identifies the location of the epinephrine, its administration technique, and clinical situations where its use would be indicated.					
	3. Maintains up-to-date CPR certification.					
C. Vaccine Handling	1. Checks vial expiration date. Double-checks vial label and contents prior to drawing up.					
	2. Maintains aseptic technique throughout.					
	3. Selects the correct needle size. 1"-1 1/2" for IM (DTaP, Hib, HepA, HepB, Pneumo Conj); 5/8" for SC (MMR, Var); IPV depends on route to be used.					
	4. Reconstitutes and/or draws vaccine into syringe correctly.					
	5. Labels each filled syringe or uses labeled tray to keep them identified.					
	6. Demonstrates knowledge of proper vaccine handling, e.g. protects MMR from light, logs refrigerator temperature.					

		Self Assessment		Supervisor Review		
Competency	**Clinical Skills, Techniques, and Procedures**	**Needs Review**	**Meets or Exceeds**	**Needs Review**	**Meets or Exceeds**	**Plan of Action***
D. Administering Immunizations	1. Rechecks the physician's order or instructions against prepared syringes.					
	2. Washes hands and if office policy puts on disposable gloves.					
	3. Demonstrates knowledge of the appropriate route for each vaccine. [Intramuscular (IM) for DTaP, Hib, HepA, HepB, Pneumo Conj;Subcutaneous (SC) for MMR, Var; Either SC or IM for IPV].					
	4. Positions and restrains the patient; locates anatomic landmarks specific for IM or SC.					
	5. Preps the skin, cleaning the site and a 2" to 3" circle around it. Allows alcohol to dry.					
	6. Inserts the needle at the appropriate angle to skin (45° for SC or 90° for IM); if office policy, aspirate.					
	7. Injects vaccine using steady pressure; withdraws needle at angle of insertion.					
	8. Applies gentle pressure to injection site for several seconds with a dry sterile pad.					
	9. Properly disposes of needle and syringe in sharps container. Properly disposes of live vaccine vial.					
	10. Understands the need to report any needlestick injury and to maintain a sharps injury log.					
	11. Encourages comfort measures before, during and after the procedure.					
E. Records Procedures	1. Fully documents each immunization in patient's chart: date, lot number, manufacturer, site, VIS date.					
	2. If applicable, demonstrates ability to use IZ registry or computer to call up patient record, assess what is due today, and update computer immunization history.					
	3. Asks for and updates parents' record of their child's immunizations and reminds them to bring it to each visit.					

*Plan of Action: Might include: Review manual or textbook section on injections; review package insert; review office protocols or other references; watch video on administration techniques or vaccine handling; observe proper technique, practice injections; read Vaccine Information Statements; mentor with someone who has these skills; do role playing with other staff; attend an update, skills training or refresher course; attend cultural competency training; etc. Plan of action must include a deadline and date for a 30-day and a 3-month follow-up review.

Performance Review Acknowledgement:

Employee _____ Date _____ Plan of Action Time Frame _____

Supervisor _____ Date _____ Date for Follow-up Review _____

IMMUNIZATION TECHNIQUES
Safe • Effective • Caring

Be there for your child during shots.

Before shots

Infants:

- Bring your child's immunization record.

- Read vaccine information statements.
- Ask any questions.
- Bring along a favorite toy or blanket.
- Stay calm–your baby picks up your feelings.

Toddlers–All above, plus:

- Reassure your child honestly, "It might sting but it will only last a few seconds."
- Never threaten your child with shots, "If you are not good, I will have the nurse give you a shot."
- Encourage older siblings to reassure and comfort, not to scare your toddler.

During shots

Infants–Distract and comfort by:

- Touching soothingly and talking softly.
- Making eye contact as you smile at him/her.

Toddlers–Also try:

- Holding your child securely on your lap.
- Talking to or singing with your child.
- Helping your child take deep breaths and slowly blow out the pain.
- Using a hand puppet.
- Pointing out posters or objects around the room.
- Telling your child a story or have him/her tell you one.
- Allowing your child to cry, don't force him/her to be brave.

After shots

Infants–Comfort by:

- Holding, cuddling, caressing, and/or breastfeeding
- Talking lovingly and soothingly.
- Asking your doctor for advice on using a non-aspirin pain reliever when you get home.

Toddlers–Also try:

- Giving praises and hugs or a surprise.
- Reassuring your child that everything is okay.

At home

- Mark your calendar for your next appointment.
- Review vaccine information statements for possible reactions.
- A cool wet cloth can reduce redness, soreness, and/or swelling where the shot was given.
- Observe your child for the next few days. You might see a small rash or notice a fever. If your child has any reaction that concerns you, call your doctor or seek medical attention.
- To reduce pain or fever, your doctor may recommend you give your child a non-aspirin pain reliever.
- Also try giving your child a sponge bath with lukewarm water to reduce fever.
- Give your child plenty of fluids. It is normal if he/she eats less than usual for the next 24 hours.

A parent's love makes all the difference.

IMMUNIZATION TECHNIQUES
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IMM-686 E/S (1/01)

El amor de padres hace una gran diferencia.

Antes de las vacunas:

Niños menores de 12 meses:

- Traiga la tarjeta de vacunas a todas las citas con su médico.

- Lea la información sobre las vacunas que va a recibir su hijo(a).
- Si tiene preguntas, pregúntele a la enfermera o médico.
- Manténgase calmado(a) para que su bebé aprenda de usted.
- Traiga el juguete o cobija favorita de su hijo(a).

Niños mayores de 12 meses–
Todo lo anterior, pero también trate de:

- Asegurarle que todo va a estar bien, pero no le mienta. Dígale que, "puede que duela un poco, pero sólo por unos segundos."
- NO amenazarlo con vacunas, "Si no te portas bien le voy a decir a la enfermera que te dé una vacuna."

Durante las vacunas:

Niños menores de 12 meses–
Distraiga y consuele a su hijo haciendo lo siguiente:

- Acarícielе tiernamente y háblele suavemente mirándole a los ojos y sonriéndole.

Niños mayores de 12 meses–
Todo lo anterior y quizás:

- Siénte a su hijo(a) en sus piernas mientras le administran las vacunas.
- Cuéntele o cantele su historia o canción favorita, (si es posible anime a que su hijo(a) le cuente o cante su cuento o canción favorita).
- Ayude a su hijo a que respire profundo y que imagine que sopla lentamente el dolor hacia fuera de su cuerpo.
- Use un títere de mano.
- Platique con su hijo y enséñele cosas alrededor del cuarto donde estén.
- Déjelo(a) que llore—no le pida que sea valiente.

Después de las vacunas:

Niños menores de 12 meses–
Consuele a su hijo de la siguiente manera:

- Deténgalo(a) en brazos hablándole y acariciándole tiernamente, o dele pecho.

Niños mayores de 12 meses–Todo lo anterior y quizás también:

- Dele o prométale un premio por portarse bien–a esta edad les gusta recibir halagos, abrazos, curitas o calcomanías.
- Asegúrele que todo está bien.
- Pregúntele a su doctor(a) si recomienda el uso de medicina sin aspirina para reducir la fiebre o dolor.

Cuando llegue a casa:

- Apunte en su calendario la siguiente cita para vacunas.
- Lea las hojas de información de las vacunas que recibió sobre posibles reacciones.
- Observe a su niño por los siguientes tres o cuatro días. Puede que le dé un pequeño sarpullido o fiebre. Si su hijo(a) presenta cualquier reacción seria, llámenos o busque atención médica.
- Para reducir el dolor o la fiebre, algunos médicos recomiendan el uso de medicinas sin aspirina.
- También puede darle un baño de agua tibia para reducir la fiebre.
- Dele a tomar muchos líquidos. Es normal si no quiere comer.
- Una toalla húmeda y fresca puede reducir lo hinchado, sarpullido y dolor en el lugar donde la inyección fue puesta.

Dele amor y cariño a
su bebé durante las vacunas.

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IMM-686 E/S (1/01)

COMFORTING RESTRAINT

FOR IMMUNIZATIONS

• The method:

This method involves the parent in embracing the child and controlling all four limbs. It avoids "holding down" or overpowering the child, but it helps you steady and control the limb of the injection site.

• For infants and toddlers:

Have parent hold the child on parent's lap.

1. One of the child's arms embraces the parent's back and is held under the parent's arm.
2. The other arm is controlled by the parent's arm and hand. For infants, the parent can control both arms with one hand.
3. Both legs are anchored with the child's feet held firmly between the parent's thighs, and controlled by the parent's other arm.

• For kindergarten and older children:

Hold the child on parent's lap or have the child stand in front of the seated parent.

1. Parent's arms embrace the child during the process.
2. Both legs are firmly between parent's legs.

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Gray Davis, Governor—State of California
Grantland Johnson, Secretary—Health and Human Services Agency
Diana M. Bontá, R.N., Dr.P.H., Director—Department of Health Services
Immunization Branch • 2151 Berkeley Way • Berkeley, CA 94704

IMM-720 (12/01)

Restricción reconfortante

para las vacunas

• El método:

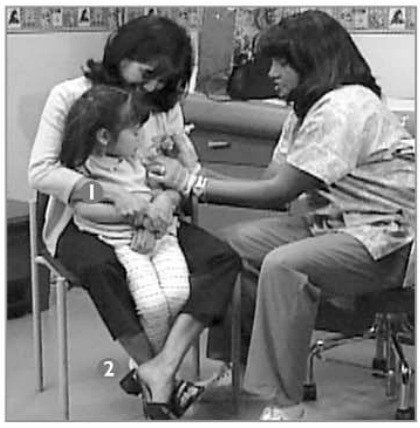
Este método requiere que uno de los padres abrace al niño y controle sus cuatro miembros. Evita "sujetar" o dominar al niño, pero ayuda a que usted mantenga fijo y controle el miembro donde pondrá la inyección.

• Para bebés y niños pequeños:

Uno de los padres sostiene al niño en el regazo.

1. El niño abraza la espalda de su padre con un brazo que queda a su vez sostenido debajo del brazo del padre.
2. El padre controla el otro brazo del niño con su propio brazo o mano. Con los bebés, se pueden controlar los dos brazos con una sola mano.
3. Las dos piernas se inmovilizan de la siguiente manera: los pies del niño se sostienen firmemente entre los muslos del padre y se controlan con el otro brazo del padre.

• Para niños en jardín de niños, y niños mayores:



Uno de los padres sostiene al niño en la regazo o el niño se debe parar frente a uno de sus padres, que está sentado.

1. El padre abraza al niño durante el proceso.
2. Ambas piernas del niño están firmemente entre las piernas del padre.

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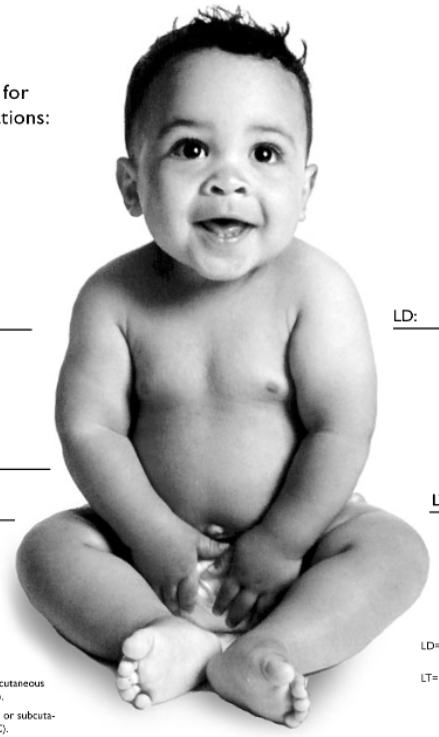
For 8 1/2" x 11" copies, enlarge to 155%

Immunization Site Map

Suggested sites for infant immunizations:



RD: _____

LD: _____

RT: _____

RT: _____

LT: _____

LT: _____

RD= Right deltoid (IM) or subcutaneous tissue on upper arm (SC).

RT= Right vastus lateralis (IM) or subcutaneous tissue on thigh (SC).

LD= Left deltoid (IM) or subcutaneous tissue on upper arm (SC).

LT= Left vastus lateralis (IM) or subcutaneous tissue on thigh (SC).

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IMM-718 (5/01)

Immunization Site Map

Suggested sites for toddler immunizations:

RD: _____

LD: _____

RT: _____

RT: _____

LT: _____

LT: _____

RD= Right deltoid (IM) or subcutaneous tissue on upper arm (SC).

RT= Right vastus lateralis (IM) or subcutaneous tissue on thigh (SC).

LD= Left deltoid (IM) or subcutaneous tissue on upper arm (SC).

LT= Left vastus lateralis (IM) or subcutaneous tissue on thigh (SC).

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IMM-718 (5/01)

APPENDIX H

Immunization Resources

Centers for Disease Control and Prevention
and
National Immunization Program

Contact Information

National Immunization Information Hotline

800-232-2522 (English)
800-232-0233 (Spanish)

Talk with a live person concerning questions about immunizations or vaccine-preventable diseases, the location of immunization clinics near you, or to order single copies of immunization materials from NIP. The Spanish hotline provides culturally appropriate language and referral services to callers who have questions about immunization. Spanish materials can also be ordered through this hotline.

E-Mail: nipinfo@cdc.gov

Healthcare providers can use this e-mail address to receive answers to their immunization or vaccine-preventable disease related questions directly from National Immunization Program experts, or to request printed materials such as ACIP statements.

NIP Website
http://www.cdc.gov/nip

Calendar of upcoming events, online access to publications such as ACIP statements and Vaccine Information Statements, online publications ordering, vaccine safety information, latest pediatric and adult immunization schedules, downloadable Clinic Assessment Software Application (CASA), Frequently Asked Questions, PowerPoint slide presentations from the Pink Book and from NIP satellite broadcasts, links to other immunization sites, and much more.

Immunization Resources You Need to Know About

Deborah L. Wexler, MD
Executive Director, Immunization Action Coalition

You Need Immunization Resources at Your Fingertips

* * * * * * * * * * * * * * * * * * *

A 10-month-old immigrant is brought into your clinic with the following immunization history: OPV at birth, 1, 2, and 4 months of age; DTP at 2 and 4 months of age; and 1 measles vaccine at 9 months of age.

You ask yourself: What vaccines does this child need? How many more doses of polio vaccine does this child need? How many doses of Hib vaccine does this child need? How many doses of MMR will this child need? Does the single antigen measles vaccine count as a dose? What about hepatitis B? varicella? DTaP? What's the soonest I should tell the parent to bring her back?

* * * * * * * * * * * * * * * * * * *

If you don't have the answers to these questions securely planted in your head, what immunization resources do you turn to? The first resource many of us think about is:

The *2000 Red Book* - The Report of the Committee on Infectious Diseases, AAP
The American Academy of Pediatrics' *2000 Red Book* is, without a doubt, the pediatrician's definitive immunization reference guide. Written, edited, and reviewed by some of the leading immunization experts in the United States, it answers nearly all of your immunization questions as well as almost every practical question you could ask about pediatric infectious diseases.

You can definitely use the *Red Book* to answer the assessment questions above. On page 34 is information about precautions and contraindications; on page 24 is Table 1.5, on minimal intervals between doses; on page 22 is the routine childhood immunization schedule; on page 269 is Table 3.12, recommendations for Hib immunization for children who are delayed; and finally, on page 27, information on immunizations received outside the United States.

The *2000 Red Book* is available from the American Academy of Pediatrics. Call (888) 227-1770 to order a copy or visit AAP's online order site at: www.aap.org/acb2/index.cfm?DID=15 No clinic seeing children should be without this resource.

But, with all due respect, the 2000 *Red Book* (855 pages of excellent information!) weighs 2 pounds, 3 ounces, so you probably don't carry it around in your pocket, and you probably don't have a lot of time to retrieve your copy, look at several nonconsecutive pages of complex information in order to make your assessment, all while this 10-month old is being restrained by her mother and has seen enough of your exam room.

So what additional resource might help you? You need a handy tool available in every exam room, in a slot or on the wall, that can help you quickly assess this child's immunization needs.

You need the "Summary of Rules for Childhood Immunization."

"Summary of Rules for Childhood Immunization"
This 0.6 ounce document will help you quickly assess almost every child's immunization needs. Published by the Immunization Action Coalition (IAC), this two-sided reference table is designed so that the complicated recommendations for immunization, such as at what ages to give vaccines, what to do if children have fallen behind, precautions and contraindications, are in one convenient place so you can make quick and accurate immunization assessments.

The "Summary of Rules for Childhood Immunization" is a document that resides in exam rooms of many health professionals all over the United States. It is reviewed for technical accuracy by the Centers for Disease Control and Prevention and a host of nationally renowned immunization experts. You can order this resource from IAC by calling (651) 647-9009 or faxing a request to (651) 647-9131. You can also download a free copy in either text or PDF format from IAC's website at: www.immunize.org/childrules

There are other excellent resources besides the *Red Book* and the "Summary of Rules for Childhood Immunization" that health professionals need in order to have the tools necessary to improve childhood immunization rates.

The Big Five

In my opinion, the best immunization resources come from "The Big Five" – The Centers for Disease Control and Prevention, the Immunization Action Coalition, the American Academy of Pediatrics, state health departments, and the vaccine companies.

I. Centers for Disease Control and Prevention

ACIP statements. ACIP statements are published in the *Morbidity and Mortality Weekly Report (MMWR).* If you want new ACIP recommendations as soon as they are released, download them from CDC's website: www.cdc.gov/nip/publications/ACIP-list.htm or order them online from CDC's Online Ordering Form which can be accessed at: www.cdc.gov/nip/publications
You may also obtain ACIP statements by calling CDC's Immunization Information Hot Line at (800) 232-2522.

CDC Immunization Information Hotline (CDC). Call this number to get ACIP statements, Vaccine Information Statements (VISs), vaccine safety fact sheets, or to speak with an information specialist who answers questions about shot schedules for children, teens, adults, new vaccines, and contraindications. This hotline also answers consumer questions in English and Spanish. Hours: 8 am to 11 pm EST Mon-Fri (voice mail available at all other times). Call (800) 232-2522; for Spanish language, call (800) 232-0233.

Vaccine Information Statements. Make sure you give these easy-to-read sheets to your patients prior to vaccination. This is a federal mandate for most vaccines. To order VISs, call your state health department or CDC's Immunization Hotline at (800) 232-2522. For foreign languages VISs, visit IAC's website at www.immunize.org/vis to download VISs in up to 26 languages.

National Immunization Program's Website: www.cdc.gov/nip If you're looking for immunization resources from CDC, this is a great place to go! There is a wealth of immunization material here. Plan to spend a lot of time looking over this site.

CDC's Division of Viral Hepatitis Website: www.cdc.gov/hepatitis If you're looking for hepatitis A, B, and C resources, this is the official source! Again, this site is packed with materials that you'll be able to use.

MMWR: CDC's *Morbidity and Mortality Weekly Review* provides recommendations and information on vaccine-preventable diseases and many more public health topics through a free listserv. Visit the *MMWR* website at: www.cdc.gov/mmwr or sign up for free electronic delivery at: www.cdc.gov/subscribe.html

CDC Satellite Broadcasts: Get up-to-date on new vaccines, vaccine combinations, and the latest recommendations from the Advisory Committee on Immunization Practices (ACIP) by tuning in to CDC's periodic satellite broadcasts. For more information about these courses, check the website: www.phppo.cdc.gov/phtn/default.asp

The Pink Book - Epidemiology & Prevention of Vaccine-Preventable Diseases is a great immunization resource book, edited by Dr. William Atkinson, et al., CDC's National Immunization Program. The *Pink Book* condenses a large amount of disease and vaccine information into an easily readable form. You can download the *Pink Book* from CDC's website: www.cdc.gov/nip/publications/pink If you want a bound copy of the *Pink Book,* the cost is $25. To order the book, call (800) 418-7246 or order online at: http://bookstore.phf.org/prod171.htm

Vaccines For Children Program (VFC) - Private providers may enroll in the VFC program and receive vaccines for eligible children (0 through 18 years of age) at no charge. Contact your state health department for further information or to enroll. To find out more, you may also visit VFC's home page at www.cdc.gov/nip/vfc

II. Immunization Action Coalition

NEEDLE TIPS is a 28-page semiannual publication of the Immunization Action Coalition. It is mailed to approximately 230,000 health professionals every spring and fall, including all primary care pediatricians, all family physicians, general practitioners, all members of the National Association of School Nurses, all members of the American Association of Occupational Health Nurses, and to anyone else who requests it who is concerned about hepatitis B and all other vaccine-preventable diseases. *NEEDLE TIPS* is widely known for its "Ask the Experts" column, written by CDC immunization experts; its feature "Vaccine Highlights," which summarizes the latest immunization recommendations and news; "What's your state doing?" which highlights each states' immunization rates for various vaccines; and new camera-ready, copyright-free, CDC-reviewed patient and staff education materials. *NEEDLE TIPS* is sent at no charge, but with a $60 membership contribution, you will be sent a "2-inch-thick" package of all of the Coalition's camera-ready, CDC-reviewed print materials on immunization, including translations if you need them. To subscribe to *NEEDLE TIPS*, send an e-mail request to admin@immunize.org, fax your request to (651) 647-9131, or visit our website at www.immunize.org/nt to read the current or past issues. Questions? Call (651) 647-9009.

IAC EXPRESS. Sign up for *IAC EXPRESS* and receive periodic e-mail announcements via the Internet about the release of new ACIP statements, the licensure of new vaccines, the availability of new immunization and hepatitis B resources, the release of important public policy statements on immunization, and personal testimonials from people whose children, or who, themselves, had vaccine-preventable diseases. Currently there are over 14,500 subscribers and the number grows every day. There is no charge for this service. To subscribe, send an e-mail message to express@immunize.org and place the word SUBSCRIBE in the "Subject:" field. Do not put a message in the message field. Your name will be added to the subscriber list. To view past issues of *IAC EXPRESS,* visit www.immunize.org/express

IAC's Website: www.immunize.org Download any of IAC's print materials with the click of a finger. Everything is camera-ready, copyright-free, reviewed by CDC for technical accuracy, and it's all free! The site also contains links to many other organizations and resources, as well as pages of information and references on special topics of interest like vaccine safety. IAC's website averages over 150,000 visitors per month whose average visit length is over 9 minutes.

IAC's Catalog (health education materials): The Coalition has over 100 items available, some in 18 languages, that you can order. Also available are videos to educate staff, videos for patients, adolescent videos, posters, a resource manual on how to reach immigrant/refugee children with hepatitis B vaccination programs, the *Photo Notebook of Vaccine-Preventable Diseases,* and the California Immunization Branch's video *Immunization Techniques: Safe, Effective, Caring.* All of our materials are camera-ready, copy-right free, and reviewed by national experts. You can order one of any item and make as many copies as you need (including our videos). This catalog is available on the web at www.immunize.org/catalog and is also found at the end of *NEEDLE TIPS.*

III. American Academy of Pediatrics

2000 Red Book - Report of the Committee on Infectious Diseases, AAP. - An excellent reference (discussed earlier) for primary care clinicians who treat children. It provides current recommendations for the prevention and management of infectious diseases. It describes the AAP's recommendations and rationale for the various childhood immunizations. Call (888) 227-1770 to order a copy or visit AAP's online order site at: www.aap.org/acb2/index.cfm?DID=15

Pediatrics (monthly journal) - This is an official publication of the American Academy of Pediatrics. It is in this journal that the AAP's Committee on Infectious Diseases publishes its official statements on vaccine use and new vaccines. For more information, call (866) 843-2271 or send an e-mail to journals@aap.org

AAP News - This monthly newspaper contains excellent information about new immunization recommendations, etc. Subscribers to the paper version (for which there is a reasonable fee) also have access to the online version. Call (888) 227-1773 or e-mail journals@aap.org

AAP's Website and health education materials: AAP recently began a program dedicated to helping parents and providers understand immunization issues. The Childhood Immunization Support Program's website can be accessed at: www.cispimmunize.org

IV. State Health Departments

Get to know your state's immunization program manager, hepatitis coordinator, and VFC coordinator. They are there to help you. Call them when you have state-specific immunization questions. Find out what kinds of patient and provider educational materials they have, including posters, brochures, and videos. Call them to register for the excellent immunization conferences that CDC broadcasts via satellite. They also may be able to help you audit your clinic's immunization rates and/or help you develop immunization tracking systems. They can also send you official CDC immunization documents. The names and phone numbers for state immunization, hepatitis B, hepatitis C, and VFC coordinators can be found at www.immunize.org/coordinators

V. Vaccine Companies

Don't forget to call the vaccine companies or their local sales representatives to see what patient and provider immunization educational materials they have that you can use to increase childhood and adolescent immunization rates. Their phone numbers and websites are listed below:

Aventis Pasteur, Inc.: (800) 822-2463
www.us.aventispasteur.com

Aviron: (650) 919-6500
www.aviron.com

Berna Products Corp.: (800) 533-5899
www.bernaproducts.com

BioPort Corp.: (517) 327-1500
www.bioport.com

Chiron Vaccines: (800) 244-7668
www.chiron.com
www.rabavert.com (information on rabies prevention and treatment)

Evans Vaccines, Ltd.: (800) 200-4278
www.powderject.com/evansvaccines_fs.htm

GlaxoSmithKline: (800) 366-8900
www.gskvaccines.com
http://us.gsk.com (corporate website)

Merck & Co.: (800) 672-6372
www.merckvaccines.com
www.chickenpoxinfo.com (information to the public and health care providers about varicella prevention)
www.hepbinfo.com (information for adolescents about hepatitis B and its prevention)

Nabi: (800) 458-4244
www.nabi.com

Wyeth Lederle Vaccines: (800) 358-7443
www.vaccineworld.com
www.pneumo.com (information on pneumococcal disease and its prevention in infants and young children)
www.prevnar.com (information about Prevnar vaccine)

National Resources: What's out There Beyond the Big Five?

Directory of National Immunization Resources is a 50-page IAC publication, packed with useful information on organizations, websites, hotlines and more. You can order a print copy for $10 by calling the Coalition at (651) 647-9009, faxing a request to (651) 647-9131, or e-mailing admin@immunize.org. Or go to www.immunize.org/resources to download a free copy.

IAC EXPRESS. Don't forget to subscribe to IAC's announcement service (discussed above) to receive e-mail messages about the newest immunization resources for childhood and adolescent vaccination as they are released. To subscribe to this free service, send an e-mail to express@immunize.org and enter the word SUBSCRIBE in the "Subject:" field. Your name will be added.

Summary

I've briefly described some of the excellent resources that are available to support clinicians' efforts to vaccinate children and teens. The Immunization Action Coalition relies on all of you to tell us about the excellent resources that we haven't discovered yet. If you know about resources that you think we should publicize, please give us a call at (651) 647-9009.

2002

Batman and Robin want YOU

to support the Immunization Action Coalition today!

For your contribution of $60 or more, we will send you a packet of all the Coalition's print materials and a full year's subscription to *NEEDLE TIPS,* too!

What is *NEEDLE TIPS?*

NEEDLE TIPS is a twice-a-year publication packed with information to make your job of immunizing patients easier! The following regular features will keep *NEEDLE TIPS* at your fingertips:

- Up-to-date information on new vaccines
- "Ask the Experts"—CDC's William L. Atkinson, MD, MPH; Harold S. Margolis, MD; and Linda A. Moyer, RN, answer questions on immunization, hepatitis A, and hepatitis B
- Patient education materials you can copy and hand out
- Charts, tables, and other reference materials to display on your wall or vaccine refrigerator
- A catalog of over 200 low-cost items you can order (print, videos, slides, photos)

Support the Coalition today!

❑ Here's my contribution to support the Immunization Action Coalition!

_____ $60 _____ $40 _____ $75

_____ $100 _____ $200 $ _____ other

Name/Title: _____

Organization: _____

Address: _____

_____

City _____

State/Zip: _____

Phone: _____

E-mail: _____

Please check the appropriate boxes below:

❑ I'm contributing at a $60 or higher level so please send me your print materials in English. I also would like to receive whatever translations you have in the following languages:

❑ Spanish
❑ Amharic ❑ Farsi ❑ Portuguese ❑ Tagalog
❑ Arabic ❑ Hmong ❑ Romanian ❑ Tigrinya
❑ Armenian ❑ Japanese ❑ Russian ❑ Turkish
❑ Cambodian ❑ Korean ❑ Samoan ❑ Vietnamese
❑ Chinese ❑ Laotian ❑ Somali ❑ **All languages**

Method of payment: ❑ Check enclosed ❑ Purchase Order (PO)

❑ Visa ❑ Mastercard ❑ American Express ❑ Discover

Card# or PO#

Exp. date _____

Signature _____

Item# U6020 (9/02)

Immunization Action Coalition

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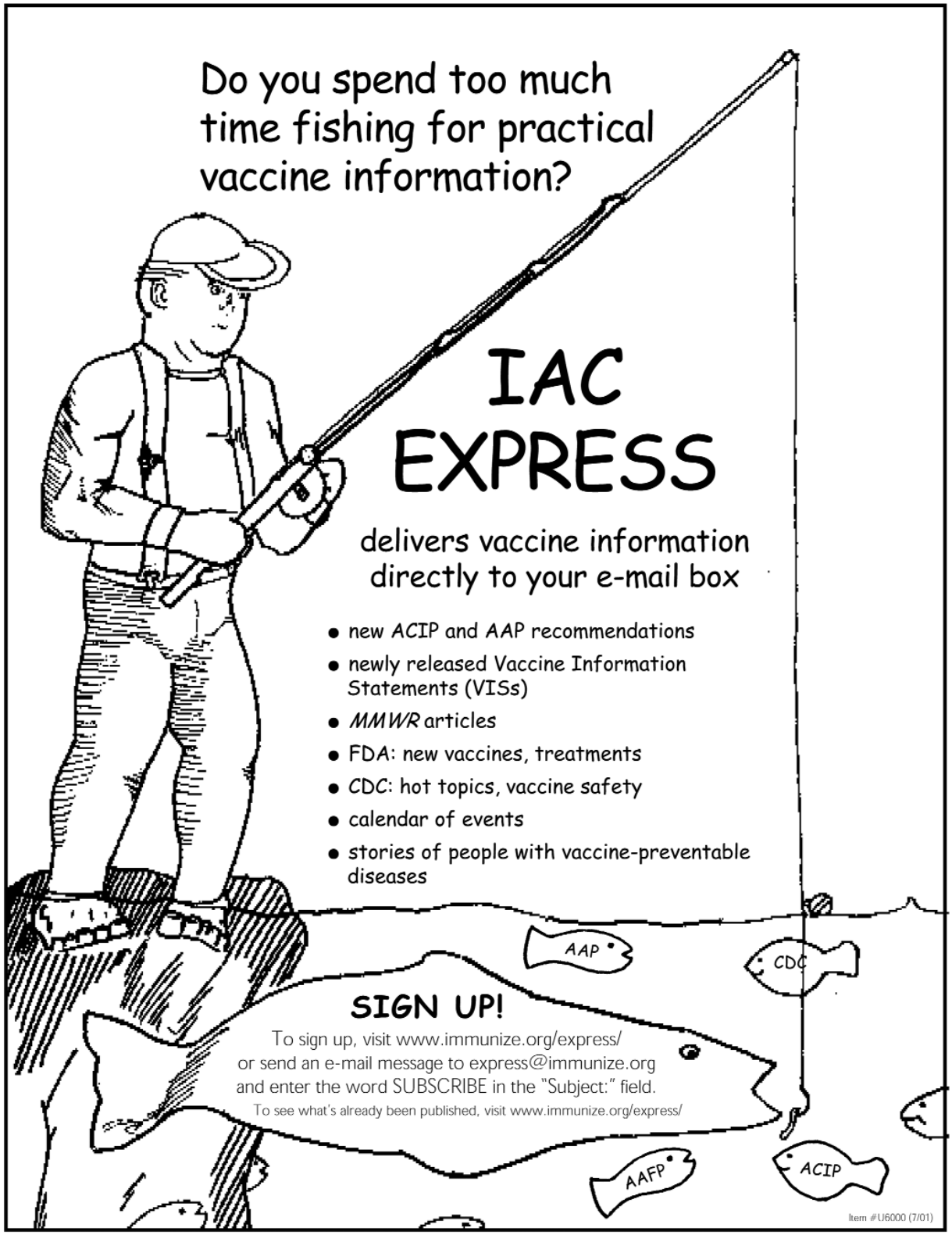

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IMMUNIZATION TECHNIQUES
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Video Order Form

This award winning 35-minute video, produced by the California Department of Health Services' Immunization Branch, includes the latest information on injection techniques for immunizing children and adults. The video is available in English and Spanish. Each video comes with full-color Presenter's Notes. It can be ordered online at www.cdlhn.com or fax this form back to us.

Billing Information

Please print clearly and minimize use of abbreviations

Name:_____

Organization:_____ Dept:_____

Address:_____

City:_____ State:_____ Zip:_____

Telephone: (_____)_____ E-mail:_____

Shipping Information (If different from Billing Information)

Name:_____

Organization:_____ Dept:_____

Address:_____

City:_____ State:_____ Zip:_____

Telephone: (_____)_____ E-mail:_____

Item #	Item Name		Quantity	Unit Price	Total
IMM-712	Immunization Techniques Video: 1-10 copies @ $15.00 ea	☐English ☐Spanish		$15.00 each	
IMM-712	Immunization Techniques Video: 11-100 copies @ $12.00 ea	☐English ☐Spanish		$12.00 each	
IMM-712	Immunization Techniques Video: 101+ copies @ $9.00 ea	☐English ☐Spanish		$ 9.00 each	
				Balance Due	

To view or purchase other Immunization Techniques materials, visit the California Distance Learning Health Network's secure website: **www.cdlhn.com**.

Make checks or money orders payable to: **California Distance Learning Health Network**

We will also accept purchase order numbers. PO#_____

Credit Card Information

Credit card type: ☐ Visa ☐ MasterCard ☐ American Express ☐ Discover

Credit card number: _____

Expiration date: _____/_____ (mo.) (yr.)

Signature of card holder: _____

You can fax this order form to (619) 594-2111 or order online at www.cdlhn.com.

For inquiries contact:

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